CHEMICAL INDUSTRIES

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Labor Policies

STRIKES multiply and employers are stiffening their opposition. Accordingly these disturbances not only are developing more critical episodes, but they are also dragging more heavily upon recovery. Walter Lippmann, who now assumes the role of apologist-in-chief for the Administration, assures us that these labor troubles are but the usual demands of labor for a better share of returning prosperity; that the labor problem involves no great principles; and lastly that, since labor is the least secure of our economic groups, the President makes a wise and far-sighted choice of policy in assuming their protection. With these conclusions we profoundly disagree.

Higher wages are not the sole—indeed, not the chief cause of our most serious labor disputes. Union recognition is the hard core of this matter. Remembering that even today, after a year of vigorous union growth under most favorable conditions, an overwhelming majority of our workers are not unionized and that most of our industries have always been upon the open shop basis, a grave principle is involved if, by federal aid, the Federation of Labor is to impose itself upon both parties. That principle involves the constitutional guarantee to all citizens of the right of free contract.

We know that labor needs protection against sweating and child work and that it should have the security afforded by unemployment and old age insurance; but we fail to find a consistent program to these ends in Mr. Roosevelt's labor policy. We do find, however, much encouragement of two ideas, thoroughly and disastrously tried out in England and Germany; namely, wage fixing by law and compulsory arbitration of disputes before bureaucratic boards. Far from displaying wisdom and foresight, the President's policy has intensified the labor difficulties surrounding any recovery. If continued they will inject labor issues into politics, an outcome to be feared and hated by all citizens.

Speaking of War Munitions

Senator Ashurst's bill authorizing Uncle Sam to lay up a store of $200,000,000 worth of copper, lead, and zinc over against the munitions needs of the next war warms our heart. It is based upon a politico-economic theory to which even our skepticism of so many of the trumps in the New Deal can give only the most enthusiastic endorsement. Here is language we understand. After all when one begins discussing the munitions of modern warfare, chemicals are, to use a good army phrase, "front and center!"

So, while we applaud the theory of Senator Ashurst, we deplore his practice. He has picked the wrong munitions to hoard.

We have—as he knows very well—great reserves of copper, lead, and zinc. During the World War, while prices did rise handsomely, nevertheless there was no famine of any of these metals. How very different was the case in many chemicals.

We would not presume to urge upon the Congress great advance purchases of sulfur, for which the United States is world's headquarters; nor (upon Dr. Harry Curtis' advice) of nitrates; nor even of vanillin, however essential it may be to the mess sergeant's beloved bread pudding. But why should not the Government take over about $200,000,000 worth of acetone, toluol, and assorted dyes?

If we did not live in a glass house ourselves, we should hurl at the Senator from Arizona the accusation of attempting to further the selfish interests of his own constituents.

Expensive Experiments

Down in the Tennessee Valley the man on the farm quite generally believes that Morgan and Lilienthal are going to make him wealthy. Men in shops and factories are not so sure of the benefits that will accrue to them from the activities of the T. V. A. In chemical circles executives are gravely concerned over the outcome of the Government's excursion into chemical manufacturing at Muscle Shoals. Among chemists and engineers the belief is general that Dr. Curtis will fail materially to better the technique of commercial operation.

These differences of opinion reflect different points of view; but they also reveal the confusion arising out of the many mixed objectives of the T. V. A. itself and uncertainty as to the future of this ambitious but formless program. Even when we strip the project to its strictly chemical activities we cannot find the definite conclusion of a well planned commercial project.

No man can talk with Dr. Curtis and doubt his sincerity. He has wisely abandoned nitrogen and logically tackled phosphoric acid. He has embarked with enthusiasm upon a large-scale chemical experiment, strongly backed by his superiors and lavishly financed by public funds. He is plainly very sympathetic with the social ideal of assisting the farmers of the region. He is apparently very insensible to the problems of fertilizer and phosphate industrialists.

If phosphoric acid is to compete commercially with sulfuric acid in the manufacture of super-phosphates two things must be done. It must not cost any more than 2c per pound. The high test superphosphate made from it must be sold to the farmer.

With a raw material cost of 1c (for rock, coke, and slag) and in the face of the American farmer's known prejudice against concentrated chemical fertilizer, neither task is likely to be accomplished unless the Government tips the scales in its own favor. Unless a proper charge is made for investment, for taxes, for depreciation, for obsolescence, for administration, for sales, at both the power and chemical plants, Dr. Curtis will be able to prove nothing. We already know that both processes he proposes to use can be worked commercially. Unless the farmers can be converted to concentrated fertilizer without recourse to some sort of bribe or threat, they will recant when the Government pressure is removed. Weighing these possibilities, it appears likely that the chemical activities of the T. V. A. will only prove to be another contraceptive to recovery, a jamboree of experiments at the taxpayers' expense, with the result that natural development is thwarted.

Quotation Marks

Prices in most lines have tended to run ahead of consumer purchasing power. It is also true that in many instances the NRA code is being used by the short-sighted as a means of enforcing unjustifiably higher prices. For example, construction remains the most depressed of industries, yet building materials are now priced at 86 per cent. of the boom-time level and one item—cement—is at 90 per cent. of that level. It need hardly be said that the public's financial ability to erect new houses is nowhere near 86 per cent. of normal and that disproportionately high costs of building materials and of building labor can not be conducive to revival in this industry. *Lawrence Stern, Magazine of Wall Street.*

To William B. Bell

For Distinguished Economic Service To the Chemical Industry

A YEAR AGO this month the National Industrial Recovery Act was signed. Probably never before in a comparable period have so many far-reaching developments taken place. As time passes and we can evaluate those phases of the recovery program which shall be of enduring value, it is my conviction that towering above everything else will be the impetus that NRA has given to constructive self-government in industry.

The principal reason why I believe as I do lies in the outstanding abilities and sane judgments of men who in the year past have demonstrated a new type of leadership in industry. A year ago we were hearing on all sides that leadership was defunct. In reality all that it needed was something upon which to focus the full force of its energy. That opportunity was afforded in NRA. Regardless of one's views of some of the underlying philosophies, or of some of the details with which these philosophies have been put into operation, a tremendous step has been made.

For anything of comparable significance, one has to go back to the days of the war-time organization of industry through the Council of National Defense,—when Mr. Bernard Baruch created a masterpiece of organization, a "brain trust" built out of first-hand, practical experience. As one phase of that activity, there emerged the Chemical Alliance, Inc., organized to supersede the Committee on Chemicals of the Advisory Commission of the Council of National Defense, an organization which in today's fashion might have carried the fearsome combination of consonants: CCACCND. Having been elected President of the Chemical Alliance in December, 1917, and serving until the end of the war, it was more instinct than foresight which prompted the keeping alive of the charter of the Alliance against the day when it might again be of timely usefulness to the industry.

That instrumentality was revivified under the leadership of William B. Bell, and has become the Code Authority for the heavy chemicals branch of the industry. It is almost gratuitous for me to emphasize that, as President of the Chemical Alliance, Mr. Bell is rendering outstanding and distinguished service of the highest order, the kind of service which submerges personal comfort and company interest for the good of the industry as a whole. The record is an open book to us all. It requires no elaboration by me, although those, like myself, who have participated directly or indirectly in the development and administration of a number of different codes, have had a unique opportunity to appraise the outstanding administrative ability which has characterized this particular code operation.

Mr. Bell's service to the entire industry in time of emergency typifies industrial leadership at its best,—a type of leadership which to me is the soundest assurance of a future for this country which will surpass anything we have heretofore achieved. Men of his breadth of vision, organizing ability, and indefatigable energy are the strength of the present and the hope of the future. To men like him, rather than to plans and panaceas, I am prepared to pin my faith.

It is altogether fitting that Mr. Bell should be selected to receive the CHEMICAL INDUSTRIES Medal in recognition of leadership in and distinguished economic service to the chemical industries. There are 1876 trade and technical journals published in this country. A relatively small number exercise any real influence in their respective industries. CHEMICAL INDUSTRIES is one of those that do. The reason is at once apparent when you consider the penetrating sense of human values, exemplified in the selection of Pierre du Pont as the first recipient of this award, for services to the industry during the war and post-war period and now by the selection of Mr. Bell for similar award for services during the equally trying post-depression period.

Symbolic of this award is the CHEMICAL INDUSTRIES Medal, the designer of which, Lawrence Tenney Stevens, winner of the Prix de Rome, has created not just a medal but a worthy work of art. Mr. Stevens has executed the medal in low, flat bas relief, revived by him from an old Babylonian technique. The medal shows the head of John Harrison, who built the first American sulfuric acid plant, our first American chemical industrialist. It is a fine piece of artistry, in which the sculptor has succeeded in catching the spirit of this award.

Mr. Bell, on behalf of the donor of the CHEMICAL INDUSTRIES Medal, it is a very real honor to present this medal in recognition of distinguished service to your industry. To which I can only add my own best wishes for your health and happiness and say that in my opinion, no more fitting selection could have been made. My heartiest congratulations.

June seventh, 1934

William Brown Bell

A Chemical Tourist through the South: II

Sulfur and Salt on the Gulfcoast

By Williams Haynes

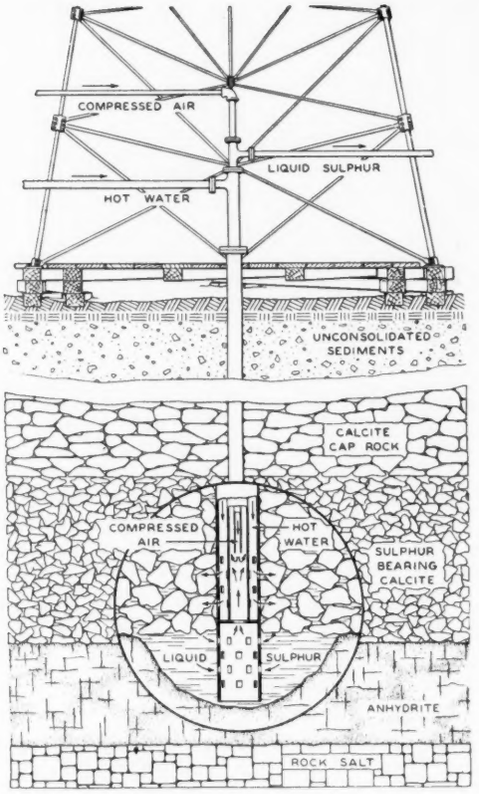
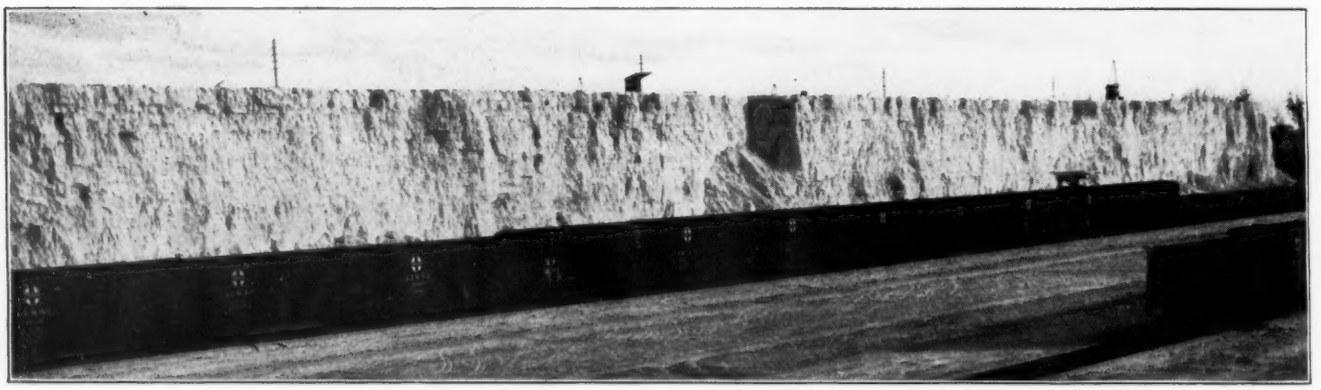


Diagram of the Frasch sulfur operation. Courtesy Texas Gulf Sulphur Company.

THAT classical conundrum about the chicken and the egg has its chemical counterpart in whether the sulfur came from the gypsum or the gypsum from the sulfur in the cap rock of the famous salt domes of Louisiana and Texas. This is a question for the geologists to squabble over. They have done so right merrily. We can be content with the fact that out of these mysterious formations are pumped each year 83 per cent. of the world's total supply, some two million tons of virtually pure sulfur. We supply our own needs and have an exportable surplus of half a million tons, which is something more than the combined output of Italy, Japan, and all other producing countries added together. Our position in sulfur is certainly dominating. Down on the Gulfcoast is literally the world's sulfur headquarters.

From the Mississippi to the Rio Grande, throughout this region are scattered some 200 of these salt domes capped with porous limestone, impregnated with gypsum and streaks and splotches of pure sulfur, ranging from slight traces to considerable pockets. These domes lie from 500 to 2000 feet below the surface and vary in size from a few hundred feet across to as much as three miles. They are real domes, mushroom shaped, veritable buried mountains of rock salt of great thickness. Several have been bored 3000 feet without reaching the end of the salt. One is known to be at least 5000 feet thick. Although very numerous, only a few have the right combination of proper cap rock and sufficient sulfur to justify mining by the Frasch hot water process.

In this operation advantage is taken of the low melting point of sulfur by pumping hot water down a three-inch pipe to the sulfur-bearing formation. Within this outer pipe, which is drilled down with the regular rotary rig of the petroleum industry, is a three-inch pipe which rests on a collar of the outer pipe. Within the three-inch pipe is a third, a one-inch air pipe. Water heated to about 240° F. is pumped down the six-inch



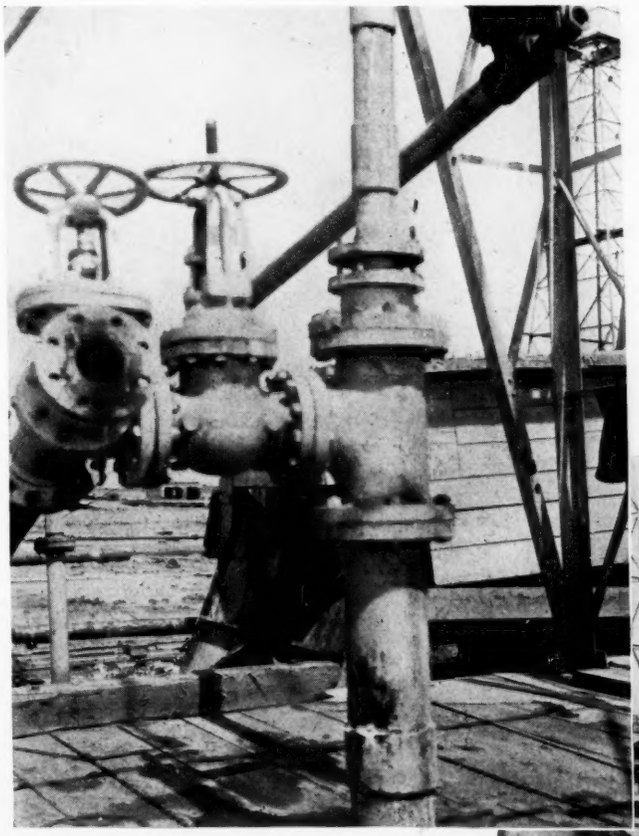
Sulfur pile at Texas Gulf's Boling Dome, showing part of the three million tons of stocks now stored above ground in these great blocks of pure sulfur in the Gulf-coast region.

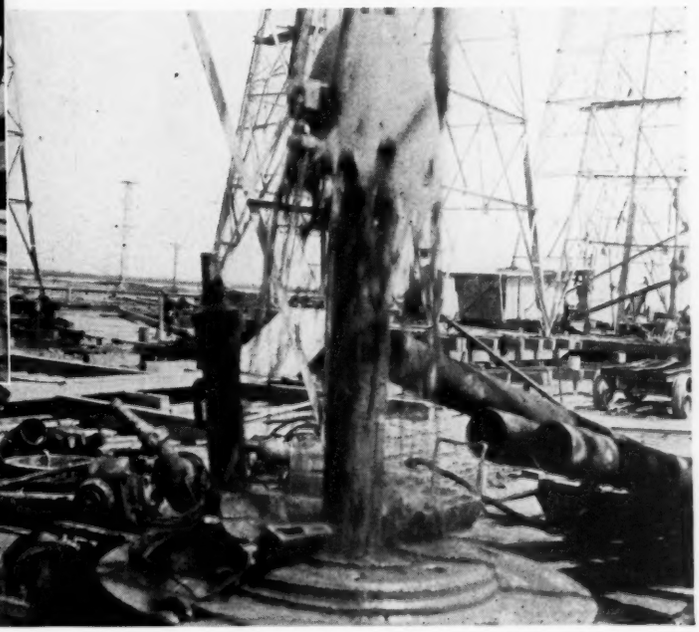
pipe and escapes through perforations to the sulfur-bearing cap rock where it melts out the sulfur. This, being heavier than water, flows down, forming a pool at the bottom of the well. Compressed air down the central one-inch pipe forces the sulfur to the surface through the three-inch pipe.

It's not quite so simple as this sounds. The thermal efficiencies of each well differ. Care must constantly be exercised to keep the molten sulfur at the best viscosity for pumping and to prevent its freezing. Subsistence of the cap rock must be reckoned with. As one of the veteran field men said, "Wells are like women—some are sweet-tempered as honey and others are as cantankerous as a mule. Some that drill ugly will pump like a watch. Some rich ones are mighty fickle. Every one has its own notions. You just have to humor them all."

It was back in 1903 that Herman Frasch, after a dozen heart-breaking years of experiment, first pumped sulfur out of a dome about eight miles from Lake Charles in western Louisiana where the new Mathieson Alkali plant is building. Inspired by this new venture, Capt. A. F. Lucas, who had brought the Spindletop (biggest and richest oil field in the Gulf region) into production, set out, as he said, "to drill every pimple in Texas for sulfur." He discovered the Bryan and Hoskins mounds, both later developed by Freeport Sulphur Co., and Big Hill, the "Old Gulf" of the Texas Gulf Sulphur Co., together with a score of others of no commercial possibilities. Since then, geophysical methods of exploration have probably located all important domes in the area, with the possible exception of some in inaccessible sections of the swampy coast of Louisiana. Since the first production of the Union Sulphur Co. in 1903, the Gulf coast has produced some 34 million tons, against a total output of 28 million tons during several centuries of operations of the Italian and Sicilian mines. The output of the various domes has been as follows: Sulfur, La. (Union), 9.4 million tons; Big Hill, at Gulf, Matagorda Co., Texas (T.G.), 12 millions; Bryan Mound and Hoskins Mound, near the mouth of the Brazos River (Freeport), 4.8 and 4 million tons respectively;

Liquid sulfur pumping from the well into the receiving tanks—a portrait study of Old Faithful, of the Freeport Sulphur Company





To the right, boring a sulfur well, the waste mine water splashing over the top. Above, the working parts at the head of a sulfur well; for explanation of the various pipes see diagram at the head of this article.

Boling Dome at Newgulf and Longpoint in Fort Bend Co., Texas (T.G.), 3 million and 260 thousand tons respectively. The output of the newer mines has been: the Palangana Dome, at Benevides, Texas (Duval), 225 thousand, and Lake Peigneur, La. (Jefferson Lake Oil Co.), 385 thousand. Grande Ecaille is only just in production and is now pumping about a thousand tons daily.

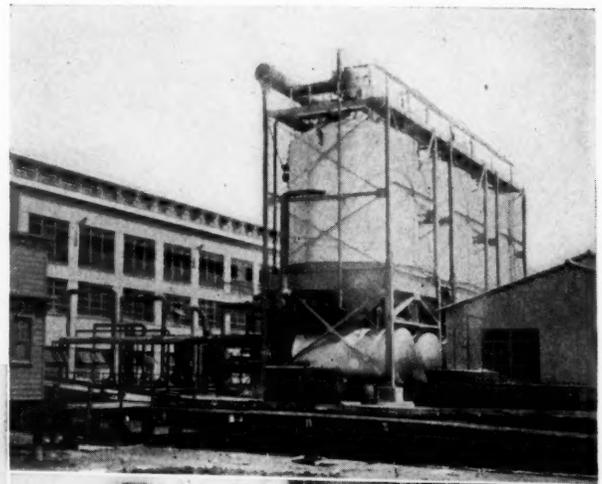
Recently prospecting has been active. The old Union Company has attacked with renewed activity its search for a possible operation to take the place of their original mine, which was exhausted in 1923. Moreover, the Bryan Mound having been in continuous production since 1912, Freeport providently sought another dome and has within the year brought a most interesting operation into production on the Mississippi Delta. With the under-water operation of Jefferson Lake and the Duval mine in the extreme southern part of Texas, two new producing companies have come to the market. Sulfur developments—technical and commercial—have, of late, come on apace.

The two newest operations are in Louisiana, a return to the native state of the Gulfcoast sulfur industry. The location of workable domes is the primary consideration, but the 75 cents a ton tax in Texas, against less than a third of this in Louisiana, is a factor not to be ignored.

The newest of all sulfur operations, Freeport's Grande Ecaille, is a perfect industrial incident of Mahomet going to the mountain. Plant location in the sulfur industry is a problem with no complications of markets, freight rates, labor-supply, or any economic, social, or political considerations to balance against the questions "where?" and "how much?" Over the dome, there the plant must be. Nobody would pick the marshy edge of a bayou on the southern edge of the Mississippi Delta, ten miles from fresh water, far from fuel, swarming with mosquitoes, open to the full force of Gulf storms, as the *beau ideal* chemical plant situation. That an alert and experienced management should deliberately choose to struggle through such natural disadvantages and meet the extraordinary expenses of such difficult construction work, is proof presumptive that Grand Ecaille dome is rich and big. On this swampy site has been erected a model plant, the essential purpose of which is chemically to purify the muddy water of "Ole Man River," deliver it ten miles away, heat it, and send it 1500 feet underground at a temperature of 235°; a modern monument to the company's courage and foresight. That it handles 2,809,000 gallons a day and regularly transfers the B.T.U.'s of the fuel oil from the coils in the boilers to the sulfur underground at 74 per cent. efficiency is eloquent testimony to the skill and experience of its staff.

After a day spent at this remarkable plant we sat down at a little square table in Galatois' with the two men probably most responsible for this astonishing accomplishment, and after such a luncheon as only New Orleans affords, we heard from Wilson T. Lundy and H. S. Burns the amazing story.

"It couldn't have been done at all, save for water transportation. The dome lies at the edge of Lake Grand Ecaille—'Big Fish' in the patois of our French neighbors—10 miles below the right bank of the Mississippi, 45 miles below the city. But those 10 miles are a mat of brown, fibrous, decaying vegetable matter floating on an ooze of sand and river sediment under-



Scenes at Grande Ecaille. Above, treating plant where water is heated, purified and filtered. Left, the way the mail arrives over the ramps for the men in the working camp. In the corner, left to right, George Tolbert, General Superintendent; K. T. Price, Field Superintendent; Donald B. Mason, Consulting Chemical Engineer.

lain by unctuous clay. Fortunately, by a roundabout way, through bayous and tidal inlets, we could reach Grande Ecaille by barge from New Orleans, and after we had dredged our own canal across that ten miles of marsh we were helped greatly by being able to deliver supplies at our own dock on the River.

"The first man who went to work stood on a plank in hipboots and drove down a pile, to set his lunch-box on—literally, that was how we had to begin. We camped the men in houseboats and our first building was the cook-house and men's quarters.

"Prospecting had been done with regular well rigs on wooden mats, and initially we considered mining from floating barges, but soon decided to fill in over the dome area to an elevation of 4 to 8 feet. This is being done progressively, as you saw, and we have only filled a small part of the total dome area of about 1100 acres. We have tested only 209 acres; the remainder is obviously most promising, but not proven."

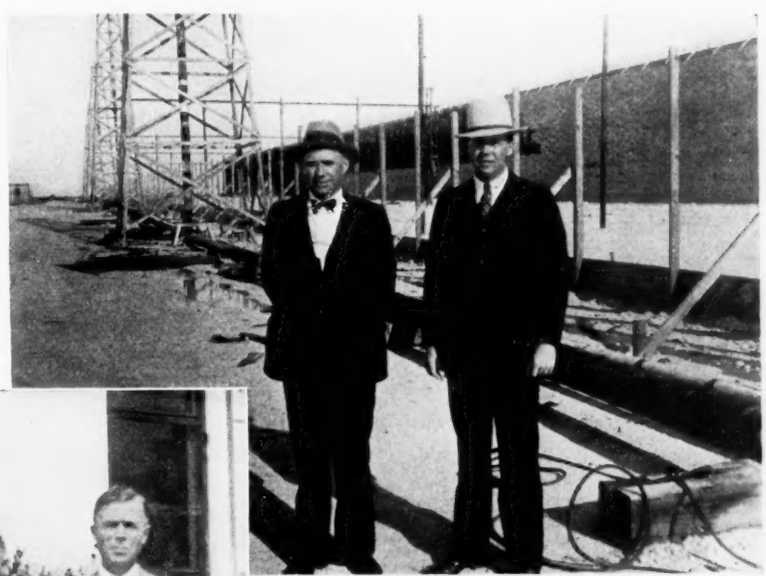
The general manager reached out a thin brown hand for the coffee pot, and the chief engineer took up the tale. They are quite different types, these two old companions in sulfur mining. Lundy is slight and lean, excessively quiet in speech and manner. Burns is bigger and thicker, with a laughing eye and a grim jaw.

"After we proved that a 75-foot piling in that muck will hold up 8 tons, the rest was just like a good golf swing—all a matter of timing," and he smiled just a wee bit sarcastically. "We had to plan every step so that the right materials were on hand at the right time for the right job. We didn't have room for a box of tacks a day before the carpet was ready to be laid. As Mr. Lundy pointed out, our water transportation really made this quite easy, especially with the trainboats from Norfolk, which kept a perfect schedule. It was all just about the direct opposite from building at Bryan Mound, where we had no transportation and 28 miles of hand ferry."

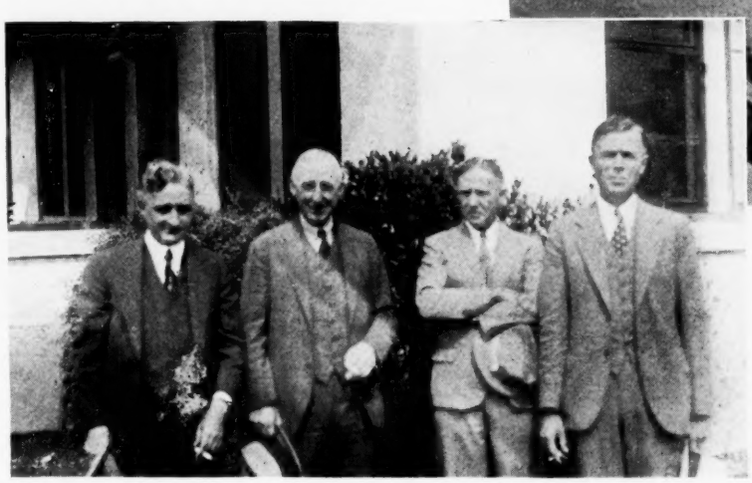
Evidently these Mahomets are used to mountaineering, and I asked him what had been his greatest problem.

"Only one thing kept me awake nights. While we were building we had 17 storm signals flown for our part of the Gulfcoast. And down here a storm signal means something, especially when you have thousands of piles and tons of machinery lying around to be tumbled about by a hurricane or a tidal wave—so I walked the floor seventeen nights."

Down at the new plant itself, the difficulties of swamp building are apparent. They do not seem so appalling as they must have appeared to the first comers. In fact, the two immediate impressions are, first, of the great distances a sulfur operation takes in a stride. The 10-mile canal paralleled by 10 miles of water pipe and power line for the booster pumps all raised on piles, the cluster of ultra-modern power and water-treating buildings, 4000 yards from the mining operations, connected with long, straight lines of ramps and pump lines—all increased in their effect by the flatness of the country—make the impression of distance very great. Yet after seeing the other opera-



At the right, John Edwin, Shipping Manager, and G. C. McMillen, Production Manager, at the Hoskins Dome of the Freeport Sulphur Company, standing in front of a sulfur storage bin. Note the pipe lines and the elevated horizontal line distributing sulfur to the top of the pile.

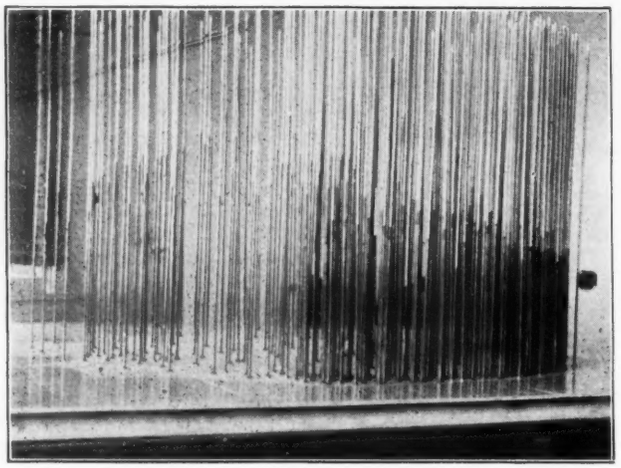


The Big Four at Texas Gulf's Boling Dome. Left to right, P. George Maercky, Assistant Vice President; Wilbur Judson, Vice President; Harry Swem, Assistant Manager; and H. E. Treichler, General Manager of the plant.

tions one learns that sulfur-mining is distinctly not a vest pocket enterprise.

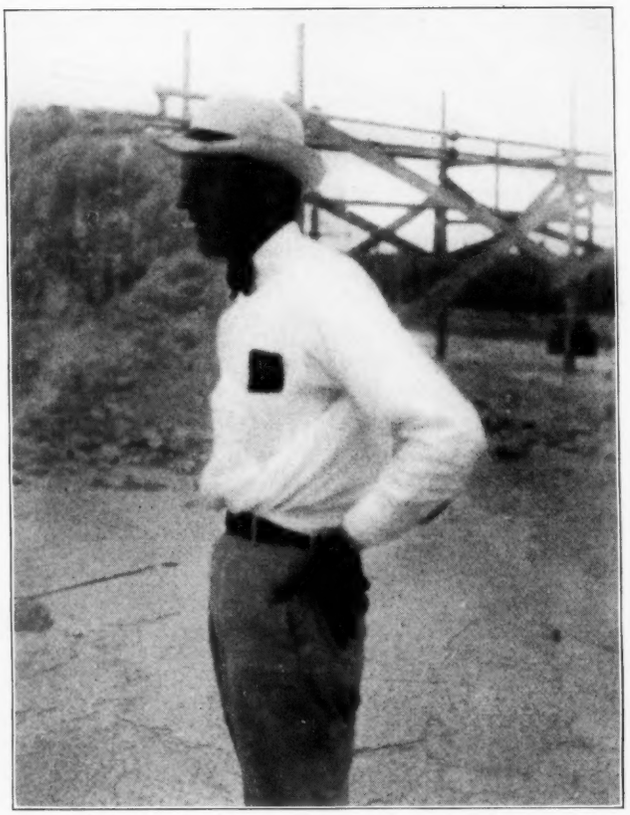
The second impression confirms the story about Freeport in "Time" in which it was characterized as "the young man's company"—a nickname that holds out in the field as in the inner sanctums. Neither K. T. Price, the field superintendent, nor Homer Smith, the power superintendent, is a grizzled veteran, while George Tolbert, the general superintendent, seems but a stripling in so important a post. And this same impression is carried over to the old operation at Freeport at the mouth of the Brazos River, where the production manager, G. C. McMillen, and the shipping manager, John Edwin, could not together muster a total of the proverbial three score years and ten.

At Freeport [note to fishermen: the Tarpon Inn certainly has a capital table, and is said to live up to its title] there is a vivid picture of the inside of a sulfur-salt dome—a great cluster of rods, each one representing a drilling on the Hoskins Mound, painted in distinctive colors to show the over-burden of soil, the cap rock, the sulfur, the anhydride, and the salt beneath. The actual depth in each boring is proportionally represented. Here too is a laboratory with a huge collection of core borings, and out in the field such a well as delights a field boss' heart, belovedly christened "Old Faithful". We stood for five minutes and watched the splash, splash, splash of sulfur into the receiving tank which has kept up from this single well for more than ten months.



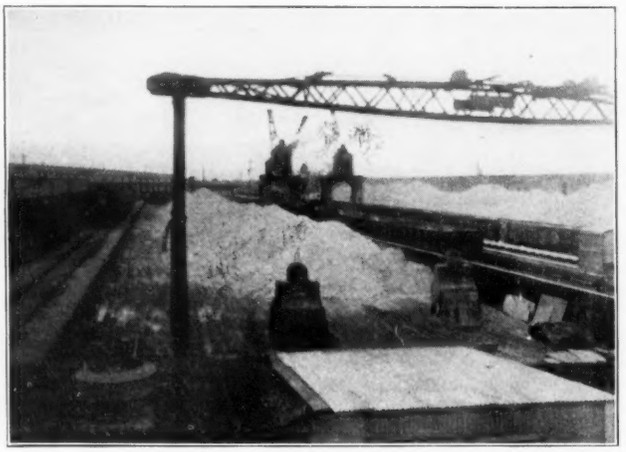
Graphic representation of the wells on Hoskins Dome, each rod representing a well; the different colors showing successively the over-burden, cap rock, the sulfur, anhydride, and the salt beneath.

Fifty miles away, southward and inland, is the largest of all known sulfur domes, the Boling Dome of Texas Gulf, so large that its external evidence of a mound was missed, over 6000 acres in extent. James F. Weed, of Beaumont, was curious over the hydrogen sulfide gas found in well water in the area, and in April, 1927, the Production Co. (of the Mellon interests, whom he had interested) struck sulfur in commercial quantities. Meanwhile other oil interests—Texas, Marlin, Vacuum—had acquired leases on the area, and Texas Gulf secured enough sulfur rights to control and in 1928 began construction, bringing the first into production March, 1929.

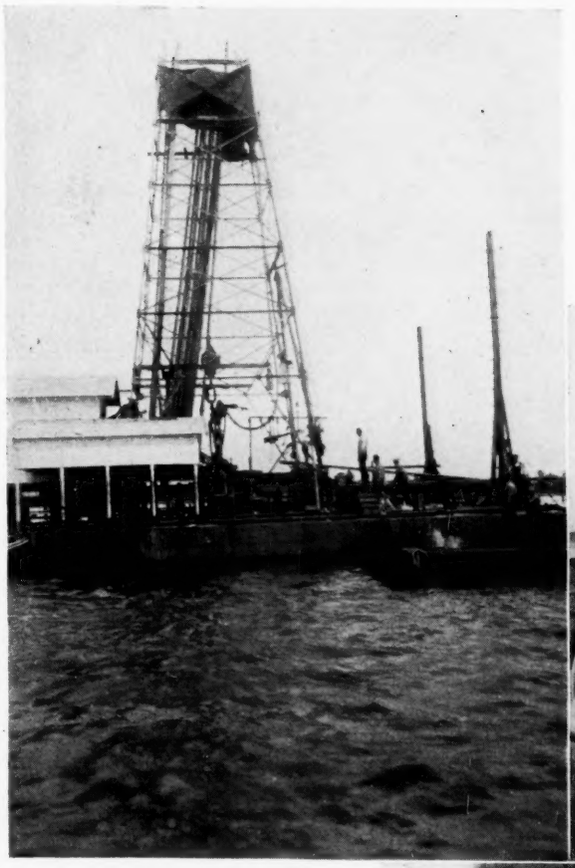


August Drachenberg, on top of the job. Standing on top of the sulfur pile at the Palangana Dome of the Duval Company. In the background, the sulfur is building up on the top of the pile.

Here is the largest single sulfur operation in the world. Here the company has built its own town with schools and a golf course and a Lodge where they dispense a most comfortable and gracious hospitality. In this delightful club we sat all one evening, after a



The loading docks of Freeport Sulphur at Galveston, showing two of the four 30 ton cranes, and in between the tracks the belt conveyors for shiploading at the docks. A record of 37 boatloads was established in the month of September, 1933.



Drilling sulfur from a barge through the waters of Lake Peigneur, of the Jefferson Lake Oil Company. Below, left to right, Harold Jacquet, Assistant Field Superintendent; Gaston Etie, Field Superintendent; and Harvey Wilson, Assistant General Superintendent. Below, J. M. Todd, General Superintendent at the Jefferson Lake operation.

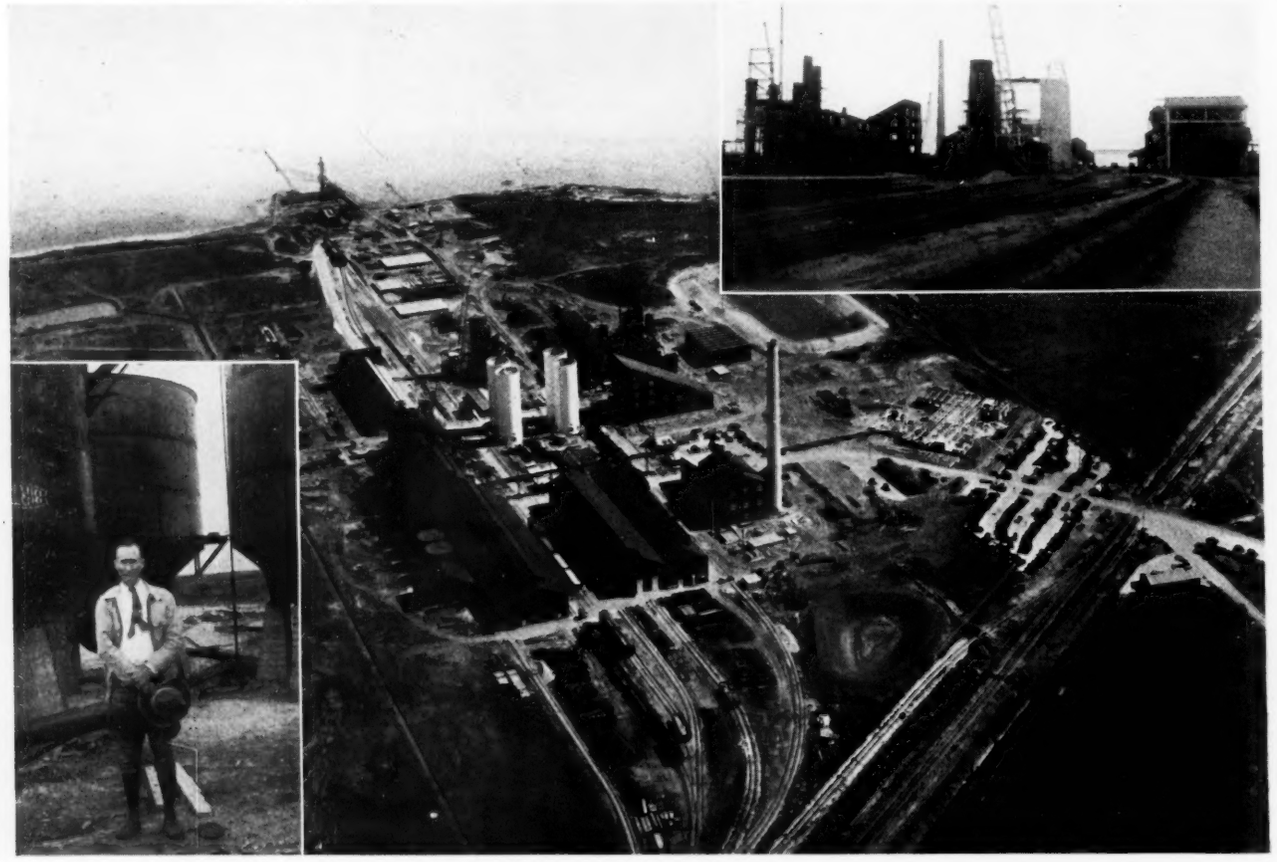
trip through the plant, and heard three men, who have spent active years in all branches of sulfur mining, tell first-hand accounts of the industry. They were Judson and Maercky and Treichler, and their talk was of Frasch and the old Union, of Saiti and Williams, of Ed Simms and George Hammond, of the Brazos Syndicate and the old Mound Company, and the Vanderlip - Tilghman - Swenson partnerships.

In close vicinity to the original Frasch mine is Lake Peigneur from beneath which at a depth of about 700 feet the Jefferson Lake Oil Co. has mined sulfur since October, 1932, having brought to the surface to date 385,000 tons. They are pumping at the rate of some 300 tons daily, and the operation, in general charge of J. M. Todd, with Harvey Wilson, assistant superintendent, and Gaston Etie, field superintendent, has drilled about 75 acres of the 1000 potential sulfur area. The dome, which is under perpetual mineral rights lease from the State of Louisiana, was offered to the older companies and to several chemical companies, which all turned it down as not being potentially commercial. So Arthur Barba, Sr., went ahead on his own and has already taken out over $6,000,000 worth of sulfur with the end not in sight. The oil company has assuredly gotten back its bait, for their plant is quite modest and mining from floating barges, developed to meet the requirements of a dome under 6 feet of water, has certain advantages. Their field boss, Etie—a Louisiana creole who worked once for Frasch—summed this up drily: "She has her good points, this mining under the water—we can rig a drill in about two hours and more often in less than an hour—*mais oui*—" and he shrugged his shoulders expressively.

'Way at the other end of the Texas Gulf coast, only a few miles from Mexico, is the operation of the other new company in the sulfur field. It is in charge of a German veteran of the days of the old Union Company. August Drachenberg is pumping up about 200 tons a day for the Duval Sulfur Co. from the Palangana dome at Benevides.

The story is not unlike Jefferson Lake, for this

dome was discovered by Cain and Smith while drilling for oil in 1924, leased to Texas Gulf, which after 29 test drillings concluded not to develop the property. So the oil men went ahead and brought the dome into production in December, 1928. Admittedly it is a small operation, worked economically and modestly. With sulfur under his nails, as the saying is, in working clothes, and as bronze as a Mexican, August Drachenberg is very much on the job as field boss. "I like it here," he confessed, as we sat in the tiny parlor of one of the company houses. "It's high and dry, cool and no mosquitoes, and if we are little, we are good. On the big domes they are disappointed if they don't get 20-25 tons an hour from a well. I am well pleased to get 5-10 tons. We are all on a small scale, but it's comfortable and we are independent and happy."



Birdseye view of the Southern Alkali plant showing the docks and, coming forward, the rotary kiln flanked by the drum building, stills, and absorbers at the right, followed by four concrete ash storage silos, flanked left to right by the flaking and grinding building, and in the foreground the evaporation building, machine shop and power plant. Upper right, view from the docks; lower left, John Polhamus, at the salt wells.

At the moment, however, Corpus Christi, Texas, and Lake Charles, Louisiana, are the highpoints of chemical interest. Here—the latter, just east of the Texan line; the former, almost to the Mexican Border—are building two new, big ammonia soda plants, the first alkali production in the deep South. Neither has any considerable nearby market, but both are the development of plans carefully matured during the past three years by strong and experienced companies, and both—be it especially noted—are located on the coast with deepwater shipping facilities. All of which may likely forecast plans for manufacturing other products which will consume alkalies and for expanding export sales.

The economics of this expansion have roused more than passing interest. While it seems to some a dumb example of competition insensible to the demands of the market, it appears to others a smart anticipation of our normal increase in alkali consumption, due to the industrial growth in the South. Anticipation and competition both doubtless enter into the situation.

Southern Alkali at Corpus Christi embodies a logical joining of forces. Through the technical staff of the Columbia Alkali, subsidiary of Pittsburgh Plate Glass, these producing-consuming interests are joined with the selling-consuming units of Cyanamid, thus cementing an already closely established alliance. The new plant might well forecast an expansion of the glass factory in Oklahoma, and it gives Cyanamid a place in the sun in the alkali business.

The Lake Charles plant of Mathieson has behind it quite different, but as definite logic. Since the building of the Saltville plant, the southern states have, from a freight-rate point of view, been Mathieson's natural territory, and with industrial development increasing and moving further and further South, it was reasonable to expect the Company to gravitate towards the Gulf coast salt supplies. Invasion of this

territory by another company made the Lake Charles plant almost an obligatory move on the part of Mathieson.

Defensive production of this sort prompts the many rumors of a new Solvay plant, probably on the property optioned some time ago at Baton Rouge on the Mississippi. Expanded capacity in new territory has twice previously led to new operations by this company, which is quite naturally jealous of its position as the largest American alkali manufacturer, to defend which they have never been loath to expand.

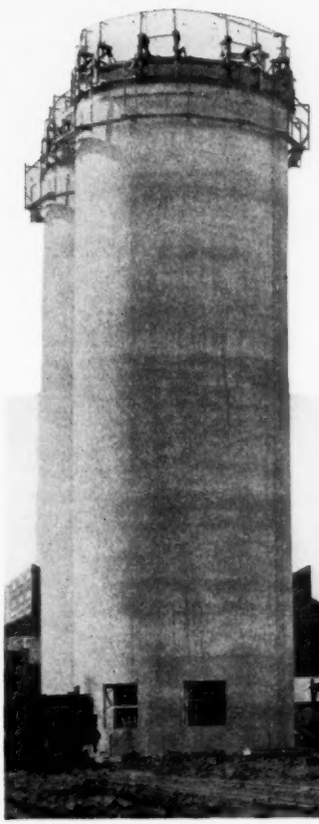
Plainly the new alkali sites have been carefully picked. The outstanding characteristic of both is their waterfront location. Southern is building on 65 acres on Avery Point in an arm of Corpus Christi Bay, above the city, with a 450 foot dock, on a new 30 foot deep channel, fronted by a turning basin 800 × 1600 feet. Above the dock is a storehouse and modern automatic equipment to load to ocean freighters and six train cars simultaneously. Safe anchorage and direct access to the Gulf of Mexico means water shipment to any point on the Atlantic seaboard or up any navigable eastern or southern river, while the location has obviously geographical advantage for shipments through the Panama Canal and in fact to many world markets. From Lake Charles, on the other hand, direct water shipments can be made through the new Intercoastal Canal to the Mississippi at New Orleans and thence by the Inland Water Ways to the entire Mississippi Valley. This makes barge shipments possible over a very great area. Open sea shipments will be practical either out the Mississippi or directly to the Gulf of Mexico out the Orange River. This means deepwater shipments to the Atlantic through the Canal to the Pacific. What changes in the alkali freight rate structure will result, nobody can guess; but by using train-boats both plants are in a distinctly competitive position with Detroit, Barberton, Painesville and Syracuse, at many Eastern consuming points.

Another similarity is that both new plants are equipping to burn both limestone and oyster shells. Limestone for the Southern plant will be shipped by rail from San Antonio, 160 miles, while Mathieson will barge the stone down the Mississippi. Shell is locally available at both locations. Southern is installing vertical kilns; Mathieson, a new and novel rotary type. Birmingham coke and ammonia will be used at both operations; but Corpus Christi will be able to draw also upon the smelters at Eagle Pass, Texas, and Mathieson plans eventually to make their own ammonia.

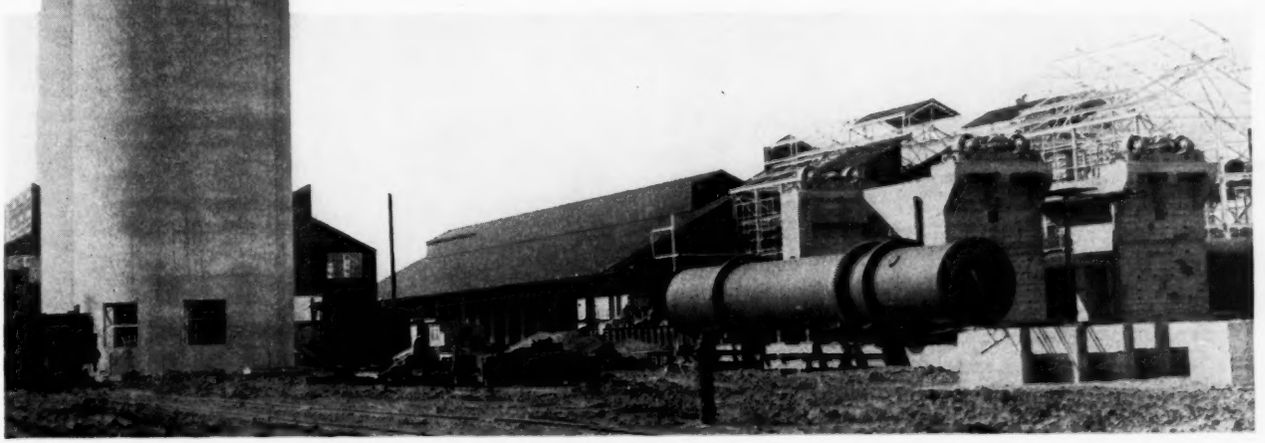
Most important of all raw materials is salt and in the Gulf country it seems surprising at first glance that neither plant is building on top of their salt supply. Mathieson is to pump brine from Hackberry 14 miles away. Southern will flow brine by gravity through 14 inch cast iron pipe from the Palangana Dome of the Duval Sulfur Company, at Benevides, 61 miles away.

It was a drizzling, drenching day when we drove down to the southeastern corner of Lake Charles; but weather evidently does not dampen the activity which is pushing this plant forward to completion by the end of the year. The operation includes a number of novel features worked out by the Mathieson engineers, and I. V. Maurer, in charge, sealed with confidence much that we heard and saw. And all photographs were *verboten*. But it is no secret that the steel frames of the principal buildings are up, the installation of apparatus, and the roofing and side sheathing well under way, and it is a matter of record that this project is estimated to cost:

Land	$ 170,000
Soda Ash plant	2,182,000
Caustic plant	870,000
Lime plant	770,000
Power and water plant	940,000
Brine supply	545,000
Engineering	700,000
General Services	646,000
Contingencies	670,000



Close-up view of the soda ash storage silo and the foundations of the rotary kiln during the construction of the Southern Alkali plant at Corpus Christi.



A total of 7½ millions, or just about a million more than the estimated investment of Southern Alkali at Corpus Christi. Here the plant is more nearly completed—shipments are promised by early Autumn—and O. N. Stevens, general manager; B. H. Westervelt, chief engineer; F. M. Berkey, plant superintendent; John R. Polhamus, in charge of the brine well and pipe line; and C. A. Harwick, construction boss with H. K. Ferguson Co., who are doing the building, are all beginning to get that "right comfortable feeling of having the job licked".

"Ton for ton, pipe line brine delivered by gravity is cheaper than the cheapest gas, and yet cheap fuel at tide water was the determining factor in our location here" was how Mr. Stevens summed it up. "So all in all, we are pretty well satisfied that we have got a mighty low cost alkali operation. We own our salt: 400 acres at Palangana. We own our gas: 40 years supply at least, six miles away. We've got the best deepwater shipping facilities of any chemical outfit and—come on and see for yourself!"

Better than any words, the photographs tell what we saw for those who cannot see for themselves.

Carbon Black in '33

Carbon black '33 production amounted to 269,325,000 lbs. This was 26,625,000 lbs., or 11%, over '32. Total sales, amounting to 374,644,000 lbs. in '33, were far in excess of the previous high record established in '29 and were 43% over '32 figures. Of the total sales, 222,358,000 lbs. (59%) represented domestic deliveries and 152,286,000 lbs. (41%) represented exports. Domestic sales were 38% above those in '32, while exports were 52% higher than in '32. Of the total domestic deliveries 191,358,000 lbs., or 89%, were consigned to rubber companies. This compares with 81% in '32, showing that the rubber industry is more than maintaining its place as a consumer of carbon black. Sales to ink companies showed a slight increase in quantity, but amounted to only 8% of the total domestic sales, compared with 11% in '32. Sales to paint companies decreased slightly but sales for miscellaneous purposes increased 21%.

In general, all foreign customers increased their purchases of carbon black in '33, in some cases gains amounting to more than 100%. The United Kingdom, France and Germany, in order named, continued to be the chief customers. December was easily the leading month for exports as the foreign buyers anticipated higher prices which became effective early in '34.

Carbon black industry has moved steadily westward for a number of years, but the center of production took a step eastward in '33 when Louisiana showed the largest increase of any of the major producing districts. Although the Texas Panhandle increased production only 7% over '32, it produced 190,356,000 lbs., or 71% of the total output for '33. Average value of carbon black at the plants, which has declined steadily since '28, showed a slight gain in '33, being 2.77c per lb., compared with 2.75c in '32. Total value at the plants of carbon black produced in '33 was $7,449,000. This compares with $6,664,000 in '32. Average yield remained unchanged in '33, being 1.44 lbs. per 1,000 cu. ft. of natural gas burned. Carbon black producers reported a consumption of 186,781,000,000 cu. ft. of natural gas in '33; this was equivalent to about 12% of the total consumption of natural gas in that year. Stocks held by producers continued to decline, being 151,993,000 lbs. at the end of '33. This was 106,005,000 lbs., or 41%, less than the amount held in storage at the beginning of the year. It is probable that this drop in stocks was partly due to speculative buying, stimulated by the prediction of higher prices in '34.

Carbon black code was approved by the Administrator for Industrial Recovery, Feb. 8, 1934. In brief, it stipulates minimum hours and wages for labor, provides for regulation of production consistent with demand, provides control of plant capacity and contains provisions for preventing violent fluctuations in prices. Bureau of Mines, Mineral Markets Reports, No. M. M. S. 388, May 25. For further details of the carbon black industry (historical and statistical Chemical Markets, May '33, p. 419.

Primary statistics of the carbon-black industry in '32 and '33 were as follows:

	1932	1933
Number of producers reporting	24	24
Number of plants	50	50
Quantity produced (pounds):		
Louisiana	42,260,000	54,470,000
Texas:		
Breckenridge	[1] 23,071,000	[1] 24,499,000
Panhandle	177,369,000	190,356,000
Total Texas	[1] 200,440,000	[1] 214,855,000
Other States [1]	.....	.....
Total	242,700,000	269,325,000
Produced by:		
Channel process (pounds)	224,536,000	234,226,000
Other processes [2] (pounds)	18,164,000	35,099,000
Stocks held by producers Dec. 31 (pounds)	257,998,000	151,993,000
Sales (pounds):		
Domestic:		
To rubber companies	130,380,000	191,358,000
To ink companies	18,341,000	18,539,000
To paint companies	7,636,000	6,260,000
To miscellaneous companies	5,126,000	6,201,000
Total	161,483,000	222,358,000
Export:		
United Kingdom	31,059,000	42,604,000
France	19,460,000	32,417,000
Germany	16,216,000	20,327,000
Other	33,337,000	56,938,000
Total	100,072,000	152,286,000
Losses (pounds)	4,814,000	686,000
Value (at plants) of carbon plack produced:		
Total (dollars)	6,664,000	7,449,000
Average per pound (cents)	2.75	2.77
Estimated quantity of natural gas used (M cubic feet)	168,237,000	186,781,000
Average yield per M cubic feet (pounds)	1.44	1.44

[1] Oklahoma and Wyoming included with Breckenridge district.
[2] Disc, roller, "special," thermatomic, and Lewis.

Bureau of Mines Magnesium Report

Quantity of magnesium ingot sold or used in '33 was 1,434,893 lbs., valued at $377,181, as compared with 791,669 lbs. valued at $228,653 in '32. This represents an increase of 81% in quantity and 65% in value, compared with '32. In '33, as in the five preceding years, domestic output of primary magnesium was all obtained from magnesium chloride recovered as a joint product of the salt wells of Dow Chemical. Following table shows total quantity and value, with average price per lb., of domestic magnesium ingot produced and sold or used by the producer, 1929-1933 and illustrates a decided upturn in the magnesium industry.

NEW MAGNESIUM INGOT AND STICK PRODUCED IN THE UNITED STATES AND SOLD OR USED BY THE PRODUCER:

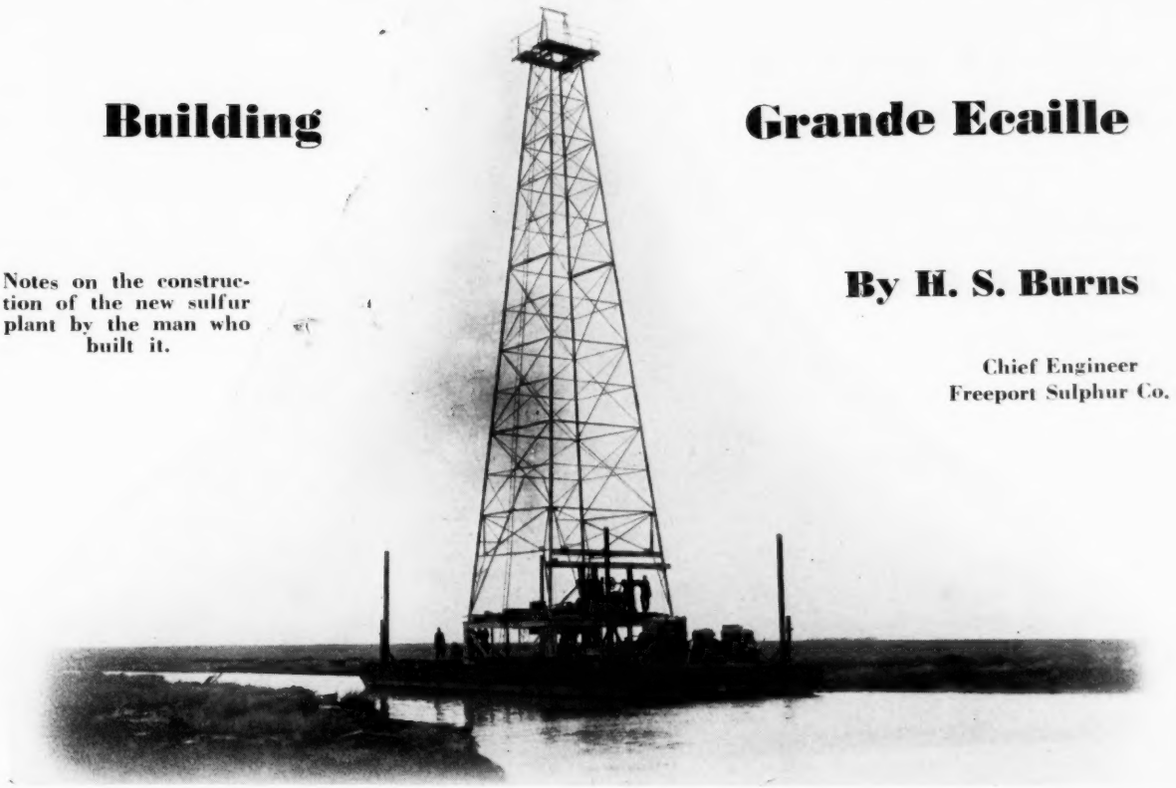
	1929-1933		
	Sold or used by the producer		
		Value	
Year	Pounds	Total	Average price per pound, domestic consumption
1929	908,351	$512,313	$0.56
1930	559,631	268,864	.48
1931	580,463	199,633	.34
1932	791,699	228,653	.29
1933	1,434,893	377,181	.26

Building Grande Ecaille

Notes on the construction of the new sulfur plant by the man who built it.

By H. S. Burns

Chief Engineer
Freeport Sulphur Co.



HOUSING facilities were first considered with the letting of contracts for pile driving on camp buildings, temporary office and warehouse buildings, temporary hospital, canteen building, and other necessary structures. These were made adequate for the care of approximately three hundred men. Water, lights, and sewerage were installed in an up-to-date manner, and the occupants of the camp enjoyed practically all modern conveniences.

First contracts on piling were let on Dec. 30, 1932. Three turn-table drivers equipped with vulcan steam hammers started work on Feb. 5, 1933. It was necessary to do all moving on travel piling as soil conditions would not permit skidding on other methods. However, these piling were laid out with due consideration for the future, and later decked over and used for material and machinery ramps; a great saving in moving heavy material and pouring concrete. Approximately 1200 piling were used in this manner. A total of approximately eighteen thousand piling were used throughout the job, varying in length from thirty-five to eighty feet. Approximately sixty per cent. were untreated and cut off below the water table. The other forty per cent. were composed of cypress piling and treated piling varying from ten to twenty pounds treatment. A distribution of these piles follows:

3000 in Power Plant
1000 in Shops and Warehouses
5000 in Sulphur Vats and Conveyors
1100 in Water Tank
700 in Oil Tanks
800 in Bleed Water Plant
1200 in Travel Piles
3200 in Water Line River to Mine
1000 in Booster line supports and relay station
600 in Hot Process
300 in Sulfur Docks

Piling were barged to location, and pulled to job site by drivers. In many cases they were floated into place at high tide. Varying degrees of resistance were met in driving, and though the majority of piling were driven to grade in relatively few blows, they showed great bearing values after setting up for a day. Most cutting was done by two negro workmen who averaged one hundred fifteen piles per day.

Concrete work followed pile driving as close as pos-

Above, derrick erection completed and barge on location at the first of a series of wells driven below the surface of Lake Washington. Barges of particularly heavy construction were used for drilling.

The ten mile canal through the flats showing the water lines erected on elevated piling at the left, and in the center a tank barge of fuel oil going out to the Grande Ecaille plant.

sible. Concrete was mixed in a central plant, a one yard mixer mounted on a barge in the canal, with hoppers for aggregates which were kept filled by a bucket crane operating in the canal, unloading direct from barge to hopper. Mixes were proportioned by volume, determined by weight. Nearby pours were accomplished by the use of buggies from mixer to forms. Pours at a distance were reached by the use of two Ford trucks equipped with one-yard hoppers, and operating over the machinery ramps. As high as three hundred and forty yards per day were delivered to the forms by these trucks. Reenforcing steel, averaging 120 pounds per yard, was bent on the job, and each pour was tested by the cylinder compression method.

Timber work in connection with other work provided quite a large item in the construction of the plant. Two and one-half million board feet were used in the construction of ramps, derrick mats, scaffolding, buildings, and pipe line supports. A large part of this was treated in varying degrees.

Earth work, an item of five and one half million cubic yards, was accomplished in two ways. The canal from the river to the mines was excavated by two bucket dredges equipped with three yard buckets. It was necessary to lengthen the booms on these dredges in order to deposit the waste far enough from the canal to prevent its sliding back in. Two million yards were moved in this manner. Field, vat and plant fills amounting to three million yards were accomplished with suction dredges operating from the lake. The townsite at the river was filled with the waste from the construction of the sixty million gallon reservoir. This amounted to approximately half a million yards.

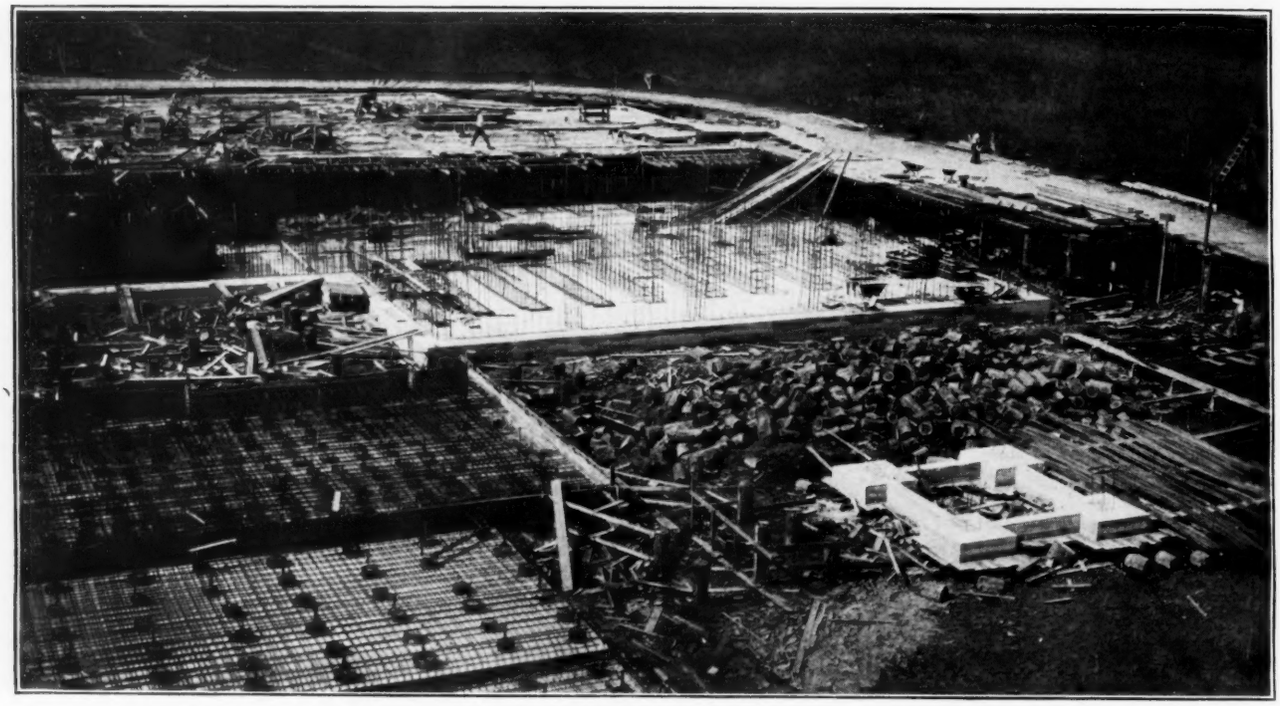
Steel superstructures, tanks, walkways, breeching, flue gas pipes, stairways, and pipe supports amounting to 2700 tons were shop fabricated as far as possible, barged to location, and erected by gin poles. All structural steel was painted with acid proof paint after erection.

All steel superstructures were covered with corrugated asbestone and roofing fastened to girders with aluminum bolts and clips. A total of 1600 squares was used throughout the job. Commercial steel sash and doors were used throughout the job. Lead flashing was employed in all cases. Twenty-six thousand square feet of area was covered in this manner in the various structures.

Painting, wiring and lighting was done by company labor, under the supervision of engineers. All paint used was acid proof and of a uniform gray color. All piping was machine painted before placing and in some cases hand painted after placing.

Piping, one of the most important parts of construction, was barged to the job in large quantities. Cutting and necessary alterations were made in the machine shop, which was fully equipped when piping operations were started. All connections were welded by the acetylene and electric arc process. Water line river-to-mines and field pipe lines composed 50 per cent. of piping work. Insulation of piping, boilers and miscellaneous fittings was contracted for on the square foot and linear foot basis.

All equipment was barged from rail end to job site and unloaded by crane to ramps. Moving was accomplished by tractors and trailers. Setting and moving within plant was done with the aid of electric cranes provided in the design of the plant. All machinery bases were grouted in, and fastened to foundations



A broad view of the East end of the plant. Picture shows very clearly several of the stages in the unusual construction methods employed.

with anchor bolts provided in concrete. Boilers with a rating of 5243 h.p., pumps and motors rated at 9300 h.p., generators totaling 2450 kilowatts, and compressors with a capacity of 2352 c.f.m. were installed in the various buildings. These were handled by hand and electric cranes and anchored to foundations.

Boats and barges used in the construction of the plant were rented and bought as necessary. Mail and passenger boats were owned and operated by the company. Tow boats and barges were rented as needed.

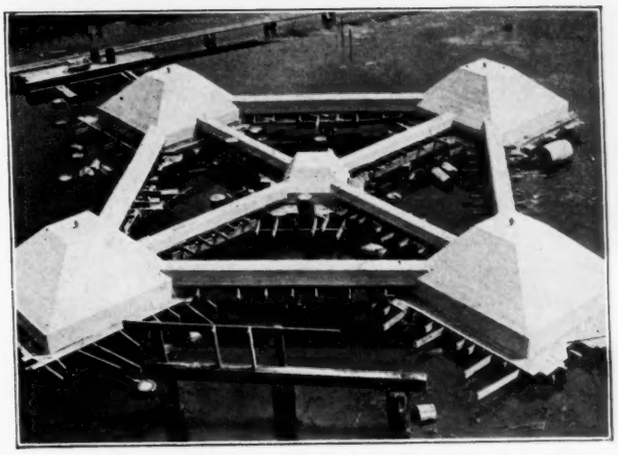
Shipping facilities, the last item on the construction program, were installed by contract. Belt conveyors from vat site to loading tower in canal at plant site, and from storage bin to loading tower in river, were installed in the steel frame work provided. The loading shovel at the vat site and the unloading crane at the storage bin site were put into operation.

In summarization, it is estimated that 2000 cars of 50,000 tons of material have been used, and that ten months time was required in the construction of the plant from the time the pile driving started on Feb. 5, 1933, until the production of sulphur started Dec. 9, 1933.

The Sulphur Plant

The primary difference between a station designed to furnish power in the form of electrical and mechanical energy and a plant designed for the mining of sulphur is that in the case of the latter the primary function is transferring heat from the fuel to the sulphur formation, water being the medium used for this purpose. The operation of generators, air compressors, and centrifugal pumps is a secondary function and approximately 30 per cent. of the heat that goes into the formation is first passed through these auxiliaries, with extraction of about 10 per cent. of the heat in the steam, or about 3 per cent. of the total heat as fuel. In a sulphur mining power plant there is practically no advantage in using boilers built for operating at more than 150 to 200 pounds steam pressure, as this is more than ample to give the desired water temperature for mining purposes. The volume of water heated is always sufficient to absorb the heat from the steam driven auxiliaries.

In our Texas plant the water is heated in three stages: From reservoir temperature to 137° F. with heat from stack gases and heat reclaimed from bleed well water, from 137° F. to 212° F. by the use of exhaust steam from turbine driven auxiliaries, and from 212° F. to 345° F. by the use of high pressure steam mixing heaters operating at 120 pounds pressure. This type of heater is used because of its ability to handle varying quantities of water at practically uniform temperature, which can be controlled by varying boiler pressure. From these heaters the water discharges through booster pumps which carry the pressure of the water well above the flash point and force the water from the power plant to the bottom of the well.



Foundation for a large water-tank. Note the "tieing in" necessary because of the peculiar ground conditions.

In our Louisiana plant the present stages of heating are from atmospheric temperature to 220° F. by the use of exhaust steam in direct mixing heaters from 220° F. to 345° F. by the use of high pressure steam mixing heaters operating at 120 pounds pressure. We expect to eventually duplicate our Texas operation; that is, using three stages of heating, the first stage by the reclamation of heat from flue gases and bleed well water.

As boilers must be operated on 100 per cent. makeup water, in order to keep boilers, heaters and lines free from scale, the hot lime-soda method was adopted at our Louisiana plant, this system being considered more satisfactory for water which sometimes runs high in salt; also, it lends itself more satisfactorily to the treatment of water which has been in contact with flue gases in the reclamation of waste heat.

The question most often asked in regard to heating water is why superheaters, economizers, indirect heaters, or direct fired heaters are not used. In the case of economizers the ability to reclaim heat from the major part of flue gases down to atmospheric temperature by direct contact of flue gases with the incoming cold water supply, and the fact that we have 100 per cent. makeup water have always eliminated, in our opinion, the use of economizers, as waste heat from flue gases can be reclaimed more completely and economically by the direct contact method.

The primary purpose of superheaters, of course, is to improve the steam consumption of prime movers; but this is not important in a sulphur plant because all exhaust steam from prime movers is utilized in heating water.

In the case of tubular heaters, there has been a great deal of study on this subject by both ourselves and prominent heater manufacturers. The main disadvantages are the large number of heaters required and the necessity for mechanical thermostatic control for regulating temperatures as compared to the simplicity of maintaining temperature in direct mixing heaters by controlling the steam pressure on the boilers.

In the case of direct fired heaters, approximately 30 per cent. of the heat would have to be generated for driving auxiliary equipment and for other purposes for which live steam is required. In addition, the question of dissolved oxygen would seem to be a serious drawback. If deaeration were accomplished it would require approximately 50 per cent. of the total heat generated as steam. This would make undesirable operation as it would be difficult to keep a balance between the amount of heat necessary to generate steam and the amount of heat conducted directly to the water.

Generating Current as a By-Product

In the operation of a sulphur plant it would appear to be profitable to generate steam at a higher pressure and exhaust it through generators to 120 pounds pressure, thus utilizing power to produce by-product current. A study of this problem, including plans for a complete plant, revealed a high unit cost which would of necessity have to be depreciated during the life of the property, thereby detracting materially from this proposition. It would not be practicable for a sulphur company to contract to supply other than dump current and this would not relieve the power company from providing stand-by electrical equipment; hence any considerable amount of power would have to be delivered at a price less than the actual cost of fuel to the power company.

Storage Handling and Equipment

For the storage and handling of sulphur at the mines two parallel sulphur bin sites 200′ × 500′ were constructed and supported by piling on a hydraulic fill built and leveled off at an elevation of 11′ above mean low tide. The sulphur which solidifies in the vats is broken down by standard blasting methods and loaded by means of an electric caterpillar shovel to a movable 36″ belt conveyor mounted on truss sections and trucks for moving through the vat area. The movable or field conveyor transfers the sulphur transversely across the vat area to a trunk line conveyor running parallel with and between the two vat sites. This permanent conveyor in turn transports the sulphur to barges moored some 400 feet from the vats.

The barge loads of sulphur are towed ten miles through a 9′ × 95′ canal from Grand Ecaille to Grandeporte, the ship and car loading terminal on the Mississippi River. At Grandeporte the barges of sulphur are unloaded by means of an electric bridge crane into storage or direct to belt conveyors to be transferred to steamers or cars. The first run of the belt conveyor is between the storage bin and canal and parallel with each. With the electric bridge crane sulphur from the storage bin or barges is loaded into a hopper mounted on the crane and fed to this conveyor to be transported over a series of housed and elevated conveyors to a tower or a tipple on the dock.

The sulphur berth consists of a timber wharf with a series of dolphins extending up stream and down stream from the wharf, making the total length of the berth 790′.

Deairing Clay Stoneware

Beneficial effects in the finished product derived from deairing clay body mixes prior to their formation are purely physical benefits. Increased compression, tensile and rupture strengths, as well as the lessened apparent porosity of deaired clay stoneware makes so great a difference that its value is beyond question. Extent of improvement wrought by deairing depends in large part on specific clay mix so treated. Some clays and clay mixes are improved to a more marked degree than others. Increased strength of the finished product due to deairing ranges from 10 to 50%. Weaker bodies are improved more in proportion to their original strength than are the ones which are of greater natural strength.

Greater Homogeneity of Internal Structure

Nature of improvement brought about by deairing may best be described as a greater homogeneity of internal structure and a reduced number of internal voids. Any process which can accomplish these ends obviously would improve the physical properties of the finished product.

To understand the specific difference between the internal structures of untreated bodies and of deaired bodies, it is necessary to know why those articles formed without benefit of deairing show fundamental weaknesses. Clay columns formed and expressed by auger types of extrusion machines are of a laminar nature. The augers which compact and extrude the clay of necessity build it up in concentric layers. These are held together by adhesion only. Presence of laminations and the non-homogeneity they cause are further aggravated by the drag of the forming dies which retard the surface films of clay, allowing the internal portions a greater freedom of movement. Due to this condition the internal layers actually tend to move faster than the external layers, causing a slippage of the concentric laminations. Air entrained in the clay will expand after the formed object is subjected to drying temperatures, and the pressure so exerted will push the cleavage planes apart. After firing, a section of ware taken in a transverse plane to the axis of formation will show a pitted and cell-like surface. Deairing operation removes practically all entrained air in the clay mass prior to extrusion, hence there are no internal gas pressures formed during drying and burning which tend to lift the strata of the body apart, and it remains a sound structure well locked together. In fact, the laminations, which of course still exist, can hardly be detected by a microscopic examination. A further benefit of deairing rests in the fact that the clay is so toughened that small cracks seldom appear at corners of the formed articles. Such small cracks often appear in clay not deaired due to localized strains during the shaping process.

Deairing is carried out in machines which have two auger chambers with a vacuum chamber between. Clay mix is fed into the first auger which extrudes it through an internal die and shredding device into a chamber held at 28″ to 28½″ vacuum. In this chamber, the air within the clay is taken out. From this chamber, the clay passes into the second auger which recompacts it and passes it on and through the forming die. J. M. W. Chamberlain, chief engineer, U. S. Stoneware Co.

Phosphates---Not Nitrates at Muscle Shoals

An Interview with Harry A. Curtis

Chief Chemical Engineer, T.V.A.

NO project of the New Deal so closely touches chemical interests as the Tennessee Valley Authority's proposed operation of fertilizer development plants at Muscle Shoals. From the broad angle of the Government's relationships with both the public utilities and the private manufacturing industries developments in the Tennessee Valley are highly important to all Americans.

From the more narrow chemical point of view, no man is at the moment more interesting and important, therefore, than the Chief Chemical Engineer of the T.V.A. Certainly no one is better qualified than Dr. Harry A. Curtis to discuss the strictly chemical aspects of the Muscle Shoals program.

Anyone trying sincerely to find out the facts about the chemical activities of the T.V.A. would naturally enough seek him out. And if he is not away at the plants at the Shoals, or out in the Tennessee phosphate fields, Dr. Curtis is sure to be found, 8 a.m. to 6 p.m., at his headquarters at the Tennessee State University, in Knoxville. Here he has a typical college-building office, a square, high-ceilinged white-walled room, with a flat topped walnut desk and wall cases crammed with technical books. But the atmosphere is completely unacademic. Up against the front of the desk has been shoved a drawing table piled with blue prints in great flat stacks and pyramids of rolls. A copy of "Perry's," a slide rule and a pad of coordinate paper covered with figures lay on the desk before him. At his elbow stand big baskets of "in" and "out" correspondence. A trim secretary slips quietly into the office with memos to read and papers to sign. The telephone rings a sharp interruption to the interview every few minutes. It is all very busy and business-like. You recognize with no difficulty that you are in the office of the engineer in charge of a real operation.

There, in the midst of all this unacademic activity sits Dr. Curtis in his shirt sleeves, with cuffs rolled up, a quiet workman, calm, frank, and pre-eminently friendly.

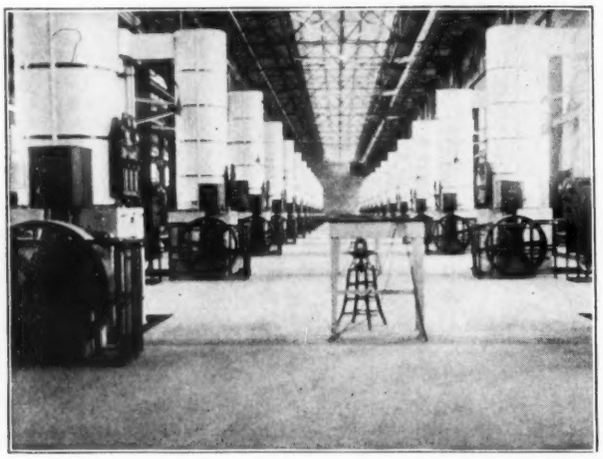
"The background of the T.V.A. Act is intensely interesting," he began: his own is as interesting. He was certainly no unknown scholar haled from cloisters and thrust into public administration. He has taught chemistry at Colorado and at Northwestern and chemical engineering at Yale; but he has been in business, too, with International Coal, with the Clinchfield Carbocoal, and with Vacuum Oil. He was in the Mexican Border Service as a lieutenant and was a captain in the Nitrate Division of Ordnance during the World War. Outstandingly he is an authority on nitrogen and previous public service includes the chief of the Department of Commerce Nitrogen Survey (1923-24) and President Coolidge's Muscle Shoals Committee. His first decision was to scrap the whole idea of producing nitrogen—either via ammonia or cyanamid.

But let him tell his story in his own way.

"You cannot understand the T.V.A. Act unless you know the forces behind it, and that Act is the charter under which the T.V.A. is operating," thus he answered when asked to tell the readers of CHEMICAL INDUSTRIES about the chemical activities of his organization.

"Muscle Shoals was an heroic war effort, fully justified at the time, to supply nitrogen needs for munitions. Two plants were built: Number One, by the General Chemical Co., to make ammonia, and Number Two, by the American Cyanamid Co. to fix air nitro-

gen by the only process with which we had practical commercial experience. But Muscle Shoals was more than a couple of chemical munitions plants. It was a great power site; it fitted into part of an old plan to open the Tennessee River for navigation; it was regarded by some as a potential nitrogenous fertilizer



Liquid air rectifying columns in the big cyanamid building at Nitrate Plant Number 2, Muscle Shoals.

factory. The huge investment it had called forth and the conflicting interests involved almost inevitably made it for years a political activity. Till a year ago none of the many bills proposed passed Congress and was signed by the President. This finally was accomplished by the union of three forces: many people financially interested in the development of this section of the country; Senator Norris, interested in the public production and sale of cheap power; and a newer group interested in conducting a large scale social experiment. The objectives of all these groups are embodied in the T.V.A. Act, which sets up a Government-owned corporation to become the yardstick in the development and distribution of power, and to improve the economic condition of the region."

Dr. Curtis paused and lit a cigarette, and leaning back in his chair, continued, "The law is mainly permissive, not mandatory in its terms, but," he added with a twinkle in his eye, "when Congress creates a corporation and votes $50,000,000 to permit it, among other things, to manufacture fertilizer and conduct experiments for the purpose of improving and cheapening fertilizer—well, we expect that they look to us for results."

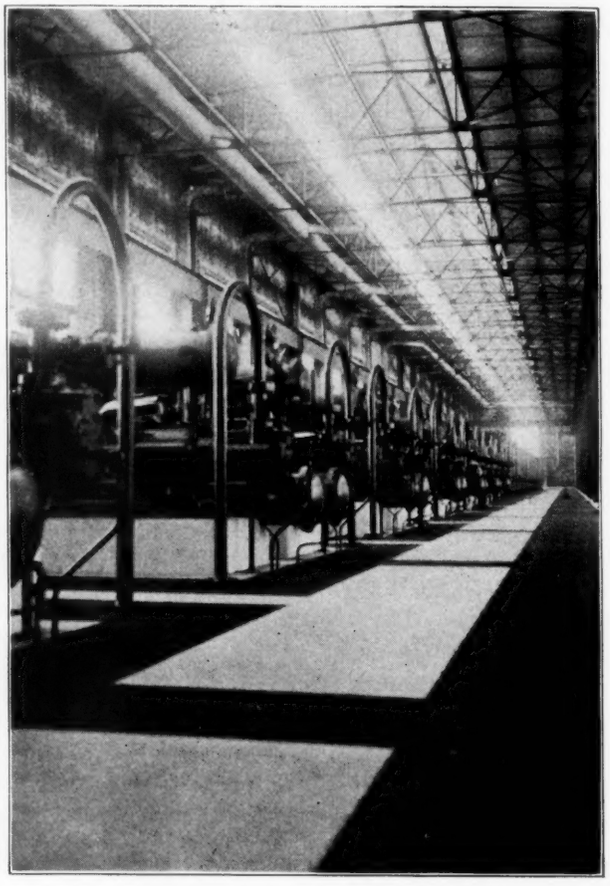
"How do you propose, Dr. Curtis, to get those results?"

"As I sized up the situation when I came in last Fall as Chief Chemical Engineer, we can make no early contribution to the nitrogen situation. Plant Number One—the so-called Haber plant—was built on very scanty technical information. The company that had built it withdrew and have since built ammonia plants that do work successfully. The cyanamid plant is capable of practical operation, technically, but it is significant that since the War not a single new cyanamid plant has been built, for as we all know this process has been superseded by the ammonia process.

"There is no sound reason for rushing into nitrogen work. Our nitrogen problem has been solved in the past fifteen years. We have all the nitrogen producing capacity we need to fight the biggest war the most vivid imagination in our Army can picture with sufficient surplus for fertilizer needs. Likewise our potash problem is in the way to be solved by the opening up of our own potash deposits in New Mexico.

"Our phosphate problem is quite a different matter. Our agronomists are learning more and more the very great importance of proper and adequate supplies of phosphates, and yet our phosphate technique has lagged behind, because treating rock with sulfuric acid is a cheap process and an easy process. It is still a question whether we can commercially beat this operation; but I think we can. That's why I am on this job. That's why we are going to tackle the problem of producing the cheapest phosphoric acid possible, as starting point for the manufacture of the most concentrated possible superphosphate.

"There are other reasons for our interest in phosphate. Right in the middle of Tennessee are important deposits of phosphate rock, abundant, available supplies of raw material, the mining of which fits into the plan to develop local industries. Furthermore, superphosphate is the key to the problem of putting the



View of the big battery of 36 air compressors in the same building.

gashed gullies that erosion has made out of the steep hillsides back into grassland that will support a dairy industry and will not wash away. Lime and superphosphate are moreover all that are needed to bring up the fertility of the great Cumberland plateau—the great stretches of flat tableland on the tops of our mountains where the subsistence farms are now being established.

Two Aims of T.V.A. Program

"Accordingly, our prime interest is in concentrated phosphates, and there are two parts to our program."

He leaned forward checking off the points on his fingers.

"First, we want to find out how to produce cheaper phosphoric acid. Second, we want to learn how to market it as economically as possible.

"I am certain that we can market concentrated superphosphate for less than 200 per cent. of plant cost, which is what the present price to the farmer represents.

"We are converting two of the carbide furnaces in the cyanamid plant at Muscle Shoals into phosphate furnaces. One is of the same general type as operated by Swann with some modifications we believe to be improvements. The second is new in design and construction. We are planning to build a new blast furnace after the plans upon which Royster, of the Bureau of Soils, has been working several years. Experimental work on this is about done and drawings are being made. In the meantime we are building at the Shoals a plant to produce triple-super-phosphate, using phosphoric acid. Here in the laboratory at the college we have made twenty tons experimentally running as high as 54 per cent P_2O_5."

Power Costs

Plainly the price of power is going to be an important factor in the cost of the electric furnace production of phosphoric acid. Dr. Curtis said he could not yet say what the T.V.A. would have to charge the phosphate furnaces for power, but emphasized that there was much seasonal surplus and that the phosphoric acid operation could be made to take advantage of this.

"It takes 6000 k.w.h. for a ton of phosphate" he pointed out, "and at a mill that is $6 against $18 for the 3 mills. With rock at $5.25 I think we can make concentrated superphosphate cheap enough for fertilizer use.

"We still have to sell this concentrated material, and the fertilizer industry says the farmers won't buy it. I know they have tried sincerely to sell it; but I feel that with the Government behind us and the Experiment Stations working with us that we have a much better chance to do this educational job than has any private company. If we can sell the farmers the idea of using concentrated fertilizers we shall certainly have done a good work for the entire fertilizer industry."

"When?" and "how much?" were two questions Dr. Curtis frankly begged.

"I do not know when we shall be in operation. The electric furnaces in August or maybe September—but I won't even guess on the blast furnace. And you can see I cannot make any estimate of our production."

Lubricating Oils from Tar

By C. H. S. Tupholme

Brief accounts have already been published of the work of the British Fuel Research Board in obtaining lubricating oils from tar. During the past few months the production and examination of synthetic oils by the treatment of low temperature gas and tar spirits with anhydrous aluminum chloride has been continued. Up to the present, according to a Report issued by the Board, the refined viscous oils obtained from hydrogenated low-temperature tar, though good lubricants at ordinary temperatures, are insufficiently stable at moderately high temperatures to be classed as good lubricating oils in general. Various catalysts have been used in attempts to hydrogenate the oil further, but it has been found very difficult to effect anything like complete hydrogenation of the hydrocarbons present. Active nickel catalysts were poisoned during the process, although the sulfur content of the oil was as low as 0.06 per cent. The most promising catalyst was found to be a mixture of sulfur and ammonium molybdate.

A preliminary engine test has indicated that, whereas a medicinal paraffin of suitable viscosity is not a good lubricant, it is improved in this respect by the addition of 10 per cent. of a refined viscous fraction from a hydrogenated low-temperature tar. While the experimental results need confirmation, they suggest the possibility of improving lubricating oils by the addition of small quantities of hydrogenated tar oils.

A preliminary examination of the types of viscous oils obtained from tar products has revealed some points of interest regarding their character. It appears that the principal constituents are hydrocarbons of a different type from those present in petroleum oils. Both the hydrogenated tar fractions and the synthetic oils are, unlike petroleum oils, freely soluble in acetone. The tar fractions have steeper viscosity-temperature curves, lower aniline points (below O° C.), lower hydrogen contents, and cover a range of higher densities than the petroleum oils. In addition, for an equivalent viscosity at room temperature, their mean molecular weights are lower.

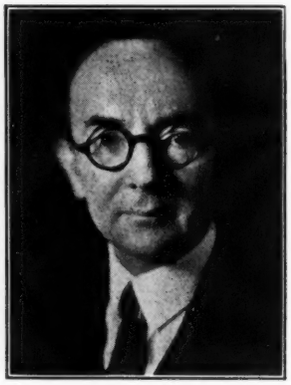
The synthetic oils are intermediate between these two types. Further, by extracting with acetone, a petroleum oil can be separated into two fractions. The extract, which varies in amount with the type of oil, has been found to resemble the synthetic oil made by the aluminum chloride process in that they both possess higher initial viscosities, steeper viscosity-temperature curves, higher densities, and lower aniline points and hydrogen contents than the original whole oil or the residue after extraction. The following table gives some data for the different types of viscous oil.

	Composition			
	Carbon	*Hydrogen*	*Density*	*Aniline Pt.*
Oil	*%*	*%*		*Deg. C.*
Mineral lubricating oil	85.8	12.0	0.927	80.2
Acetone extract of lubricating oil	85.85	10.3	0.981	34.5
Synthetic aluminum chloride oil..	88.1	11.2	0.935	37.2
Refined hydrogenated tar oil	90.9	8.0	1.062	below 0

Notes from Madrid

By Dr. M. L. Crossley

Chief Chemist, Calco Chemical Company



APRIL 4-11, fifteen delegates gathered in Madrid for the Ninth International Conference of Chemistry. The program presented a very complete resumé of the present state of chemical knowledge and was capitally handled in the important matter of preprints. The important papers were published in full, of experimental work now being done on H_2, ably digested and interpreted; but there were more interesting reports on the results of substituting H_2 for the various organics, as in acetic acid, where the observed results are to raise the boiling point and generally to lower reactivity.

Other especially favorite topics of discussion were atomic nuclei and colloidal phenemona. Such reports as the production of radio-active phosphorus by injecting the hydrogen nucleus into the aluminum atom, naturally arrested attention and provoked discussion and speculation. Outstanding contributions were the review of colloidal facts by Kruit of Utrecht and the colloidal theory of loose molecular association of solvent and solute developed in his rubber work by Standinger. An elaborate paper by the Italian Bomini, on spectra absorption, emphasizing their usefulness in determining molecular composition, was a conspicuously good piece of work.

The spirit of the Congress was distinctly scientific. The few papers on applied chemistry were mediocre, and economic aspects were practically ignored.

The atmosphere of the Congress was thoroughly international. The universality of the chemical fraternity was always to the fore, and only in the meetings of the Chemical Union—especially deliberations on nomenclature—did any evidence of the clashings of nationalities crop out.

Yet, traveling through most of the countries, one is constantly conscious of the charged air of suppressed excitement. In Germany this takes the form of a united enthusiasm for the Fatherland, a vigorous resurrection of the Teutonic determination to excel themselves and disdain for others. Frenchmen are resentful of the graft uncovered among their own officials to the point of violently overturning the Government and deeply concerned over their army's efficiency. All nations are extremely jealous of their own assets and prerogatives and highly suspicious of their neighbors and rivals.

Chemistry proved a good solvent for these political incompatibilities and the social program of the Ninth Congress was thoroughly enjoyable. There were elaborate receptions by the President of the Spanish Republic, the Mayor of Madrid, and at most of the embassies for the various national delegates. Except for his own room, no delegate was charged for anything—we even had a great batch of coupons redeemable in smokes and drinks—and busses or cars were always available. Arrangements—except only for checking hats—were perfect even for such difficult events as the theatre party.

The next Congress will be held in Rome four years hence.

Lime Sales Increase in 1933

Sales of lime in 1933 by producers in the United States amounted to 2,224,000 short tons, valued at $14,006,000, according to preliminary figures furnished by lime manufacturers to the U. S. Bureau of Mines. This is an increase of 13.5 per cent. in quantity and 13.8 per cent. in value compared with sales of 1,959,990 tons valued at $12,302,231 in 1932, and follows a decrease of 28 per cent. in quantity and 34 per cent. in value in 1932 compared with 1931. Average unit value per ton in 1933 was $6.29; in 1932 it was $6.28. Total sales of lime in 1933 include 822,000 tons of hydrated lime valued at $5,512,000, a decrease of 3.6 per cent. in quantity with increase of 2.6 per cent. in value as compared with 1932 (852,251 tons valued at $5,370,273). The average value per ton of hydrated lime in 1933 was $6.71; in 1932 it was $6.30.

Automobile Body Polishes

by Dr. Charles F. Mason

IN the early days of open type motor vehicles and unpaved roads owners kept a lustrous finish upon the car body by the use of polishing cloths. These were sold either in the form of gloves, where the polishing area was sacrificed for greater convenience, or in the form of bolts. The cloth was made by weaving unsized or desized cotton or mixed yarn into a loose fabric, and then passing it through rollers where one side contacted a polishing solution, after which the cloth was stretched upon a frame to dry. The polishing solutions consisted of different mixtures chosen with the primary object of incorporating a mild abrasive with an adhesive and a lustre imparting organic body. Three typical formulæ for polishing solutions used in 1910-1912 represent the extremes of experimenting blindly and choosing the materials upon a scientific basis.

1.	2.	3.
Boiled Linseed Oil	Wax	Paraffin
Wood Alcohol	Oil	Glycerol
Turpentine	Fixed Alkali	Amyl Acetate
Calcium Acetate	or	
Stale Beer	Volatile Alkali	
Flour	Water	
Abrasive	Abrasive	

All these combinations, if used in the correct proportions, should deposit in the dry cloth a cleaning and lustre imparting medium; but No. 1 is expensive in that during drying three components would evaporate and oxidize, depositing the abrasive, flour, calcium acetate and boiled linseed oil in the cloth, which is a poor combination for the purpose. No. 3 is out of the question for imparting a lustrous finish. No. 2 is close to the best known and, if properly compounded, will serve the purpose.

Obviously the art of emulsifying waxes and oils at that time was in its infancy. The diatomaceous earths were not on the market in the air floated form which is so satisfactory today. Some wax finishes, in the form of pastes, were introduced about that time, but soon disappeared largely because they were improperly formulated.

Car drivers were not so proud of the lustre upon the limited car body available at that time. However the transition from open to closed cars with the improvements in "paint jobs" created a demand for more appropriate polishes and finishes. The uninitiated would expect that washing with soap and water in a manner which would not scratch the surface would be satisfactory. But such is not the case. The application of a suitable oil polish followed by a wax finish is necessary to produce the lustre and the protection the public demands to-day. The ideal oil abrasive polish spreads easily over the clean surface and after drying can be wiped off with a soft dry cloth to leave a lustrous surface which is not greasy due to excess oil. A few polishes on the market are satisfactory in this respect and to the writer's knowledge contain no solvents which are detrimental to finish. Even these sometimes have two defects: when applied in the sunlight the white abrasive cannot be removed completely and even with constant shaking a stable emulsion is not obtained. Two formulas are listed below but without the specifications for the physical constant of each component which are necessary in such formulations.

1.	Parts	2.	
Abrasive (Air Floated)	8	Chalk	14
Water	59	Paraffin	3
Mineral Oil	17	Orange Juice	13
Naphtha	3	Turpentine	41
Essential Oil	3	Viscous Oil	2
Emulsifier (gums)	1	Alcohol	27
Alcohol	9		

No. 2 is typical of those found in the patent records, but formula No. 1 approximates those upon the market to-day. Some contain glycerine, oxalic or tartaric acid, soda ash or borax, and many other ingredients in small proportions, the purposes of which are questionable and if present in excess may produce a pH which is detrimental. The common abrasives are celite and bentonite; the gum emulsifiers are available in prepared form and are necessary to produce adhesion during spreading; but the alcohol, although possessing wide solvent powers and certain advantages relative to surface tension and quick drying, is hardly necessary and exerts solvent action upon lacquered surfaces. The combination of oils should be such that the boiling point range is spread over a wide interval and that during the drying process the more volatile may evaporate leaving a high boiling residue in such

quantity that each particle of abrasive is lubricated during removal and the film upon the car body is not a greasy one.

The average manufacturer tests a body polish by observing whether or not the rubbing cloth is colored by the pigment of the coating. If not, he adds small quantities of paint removers, like acetone, ortho-di-chlor-benzene, or glycols. He specifies upon his label that the color of the pigment upon the rubbing cloth is only the oxidized film which must be removed to produce lustre. This point has never been investigated scientifically, and if such a polish is used continually it may result in the surface finish wearing out before the engine.

No set method of procedure in mixing the components is followed, but it is common to mix the emulsifier, abrasive and water first and after a stated interval of time to add the others in the order of naphtha, mineral oil, essential oil, and alcohol with constant stirring. This procedure results in all particles of the abrasive being disintegrated and surrounded by the solvent. Moreover, the gum emulsifier is allowed to swell and become dispersed; but the subsequent addition of the oils is at a point where the gum is the least effective in producing a stable emulsion. Finally the addition of alcohol creates a medium which is detrimental to satisfactory emulsification.

More Suitable Mixing Method

A better method of mixing would be to allow the gum to disperse in the water and then add the oils, establishing conditions for thorough emulsification after which the abrasive, which has been wet with a portion of the water, is added. This question could be answered for each formula only by mixing the components of such a heterogeneous system in various orders and studying the systems by photomicrographs.

Another type of oil polish is an emulsion of oil in water with soaps or gums as emulsifiers plus the other solvents, like alcohol, acetone, etc., to produce a system with wide dissolving powers. In some cases sulphonated oils are used as emulsifiers and as a result of pressing such products, which are compounded for other purposes, into service for polishes, greasy finishes are the result.

The wax finishes usually comprise mixtures of waxes dissolved in volatile petroleum solvents and in some cases colored with an aniline dye. They must remain soft without crystallizing in an air-tight can for about one year and be of such a consistency that they can be spread easily. The solvent must also evaporate in about twenty minutes so that subsequent buffing will smooth the film and impart lustre. One of these formulas requires Carnauba wax, stearic acid, varnish maker's petroleum, paraffin, and kerosene. Many other combinations of waxes and solvents suffice, but the waxes should give a mixture of a hard one for lustre and softer ones for body and tenacity.

This industry has not received the scientific attention it deserves. It is in the hands of a large group of small producers whose plant equipment are mixing devices and whose technical equipment are a few formulas. Although these men strive to produce products which are not harmful to enamelled and lacquered surfaces, competition has led to bad practices and mistaken notions resulting in damage to car bodies. The only precautions known to the author are that owners of large fleets of taxicabs demand to know the formula of a polish before they contract to use it in quantity, but they are usually fooled. A solution would be effected if the associations of motor manufacturers set up rigid specifications for all ingredients of polishes and cleaners and recommended them only after they have been tested by competent chemists. In this way the triumphs of our coating chemists would be preserved.

Industry's Bookshelf

Romantic Copper—Its Lure and Lore, by Ira B. Joralemon, 294 p., published by D. Appleton-Century Co., 35 W. 32 st., N. Y. City. $3.00.

The amazingly dramatic story of copper told in a rapid, robust, picturesque style. It is a chronicle of greed, ambition and miraculous discoveries, of comic rivalries and tragic failures, of steady scientific progress and bruising battles between industrial magnates.

Termites and Termite Control—A Report to the Termite Investigations Committee, by Charles A. Kofoid, editor-in-chief, 734 p., published by University of California Press, Berkeley, Calif. $5.00.

A discussion of the biology of termites, and an account of the termites of the U. S. and possessions, and other countries, with recommendations for prevention and control of termite damage by methods of construction and the use of chemically treated and unpalatable woods.

An Introduction To Statistical Analysis, by C. H. Richardson, Ph.D., 285 p., published by Harcourt, Brace & Co., 383 Madison ave., N. Y. City. $3.00.

With greater emphasis being placed on statistics because of the "New Deal" the necessity for a clear, concise but authoritative book on the fundamentals of statistical analysis becomes even greater than formerly and present work fills this need. Book, however, is frankly technical and will require a mathematical training to employ to advantage.

Applied Geophysics In The Search For Minerals, by A. S. Eve and D. A. Keys, 296 p., published by The MacMillan Co., 60 5th ave., N. Y. City. $4.25.

Second edition of this fascinating work has brought up-to-date the advances made in the past 4 years in this absorbing study. Recent opening of Grande Ecaille sulfur deposit in Louisiana, largely detected by geophysical means, is but one instance of a number of practical applications.

Technique of Modern Welding, by P. Bardtke, 299 p., published by Messrs. Blackie & Son Ltd., 17 Stanhope st., Glasgow, C. 4., Scotland. Price 15s. net.

This is a 2nd edition. Welding technique is constantly changing and improving. The literature is not lacking sufficient printed information, but this is largely restricted to current periodicals and company booklets. Book is a noteworthy attempt to present a practical textbook of welding—a digest of the most authoritative information and data.

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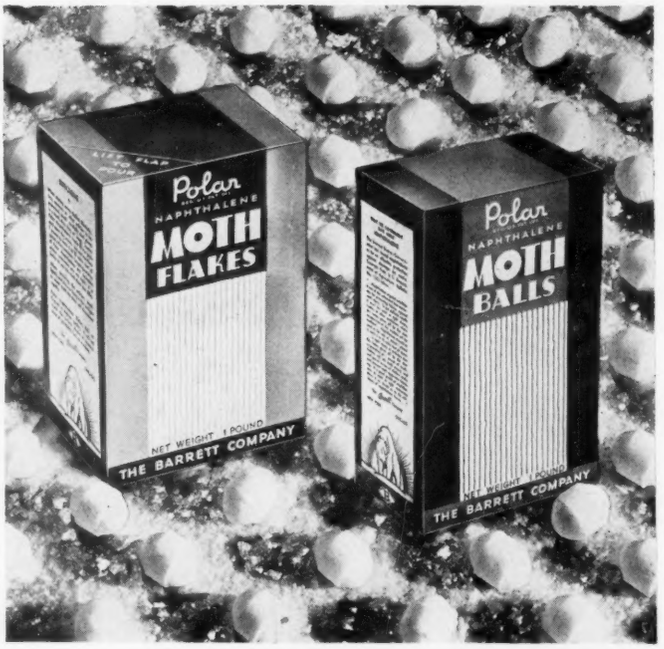
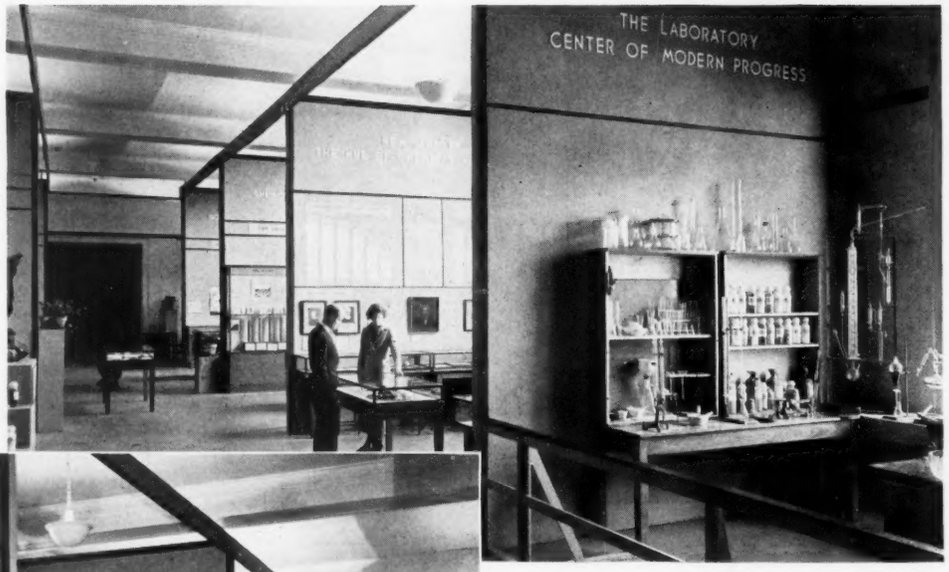
CHEMICAL

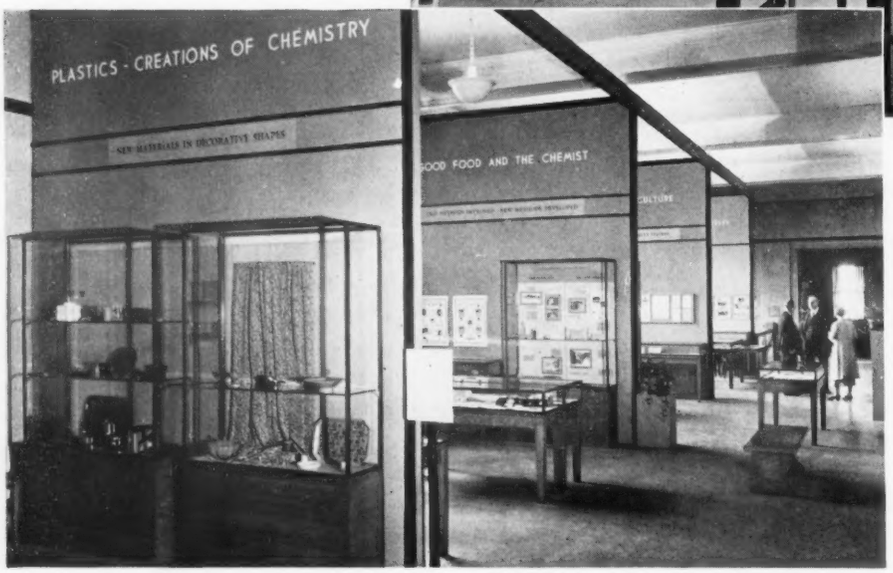
The Photographic Record

Rayon, acetate and cupram-monium "man-made" yarns formed a white cascade fountain which was spectacularly lighted in the foyer of the "Alliance of Fashion and Science" in the re-cent Fashion Group's exhibition at Rockefeller Center. Visitors had an unusual opportunity to glimpse the different materials made from these yarns, and also to learn of the surprising growth of synthetic materials.



Naphthalene goes modern. Barrett Polar Naphthalene has been a nationally known household product for many years. The popular ball and flake types are now dressed up in striking red, white and blue packages.

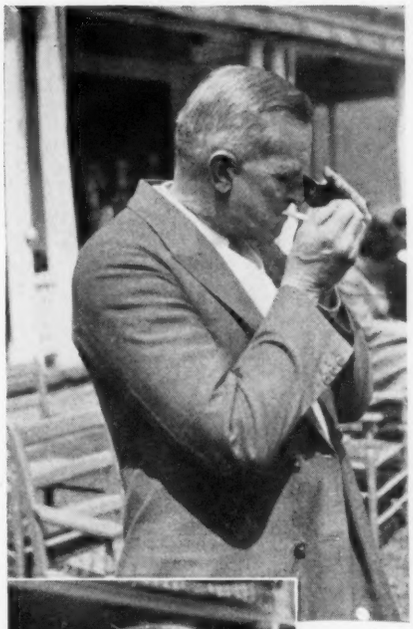


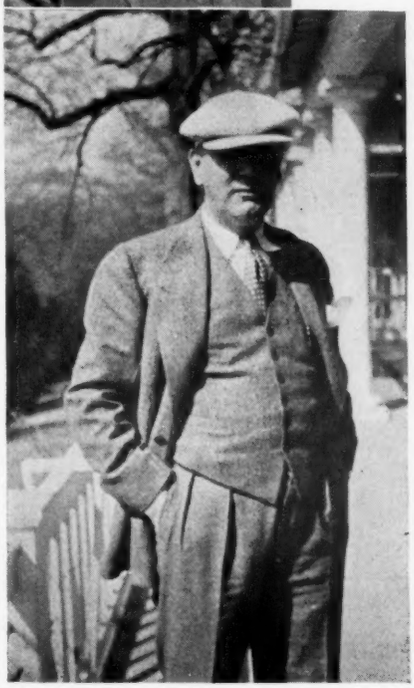


Because chemistry comprises the largest industry of New Jersey and because of the hundreds of new chemically created products, the Newark Museum, at Newark, N. J., is conducting an exhibit under the title "Miracles of Chemistry: New Discoveries for Industry and the Home," to which large crowds have been attracted. One of the features is a demonstration laboratory, fully equipped, for performance of simple and striking experiments. The Plastics Section adds a colorful background to the exhibit, with a striking display of synthetically produced products, made possible through the ingenuity of the chemist in his search for new, better, and cheaper ways of providing the necessities of life.

NEWS REEL

of Our Chemical Activities

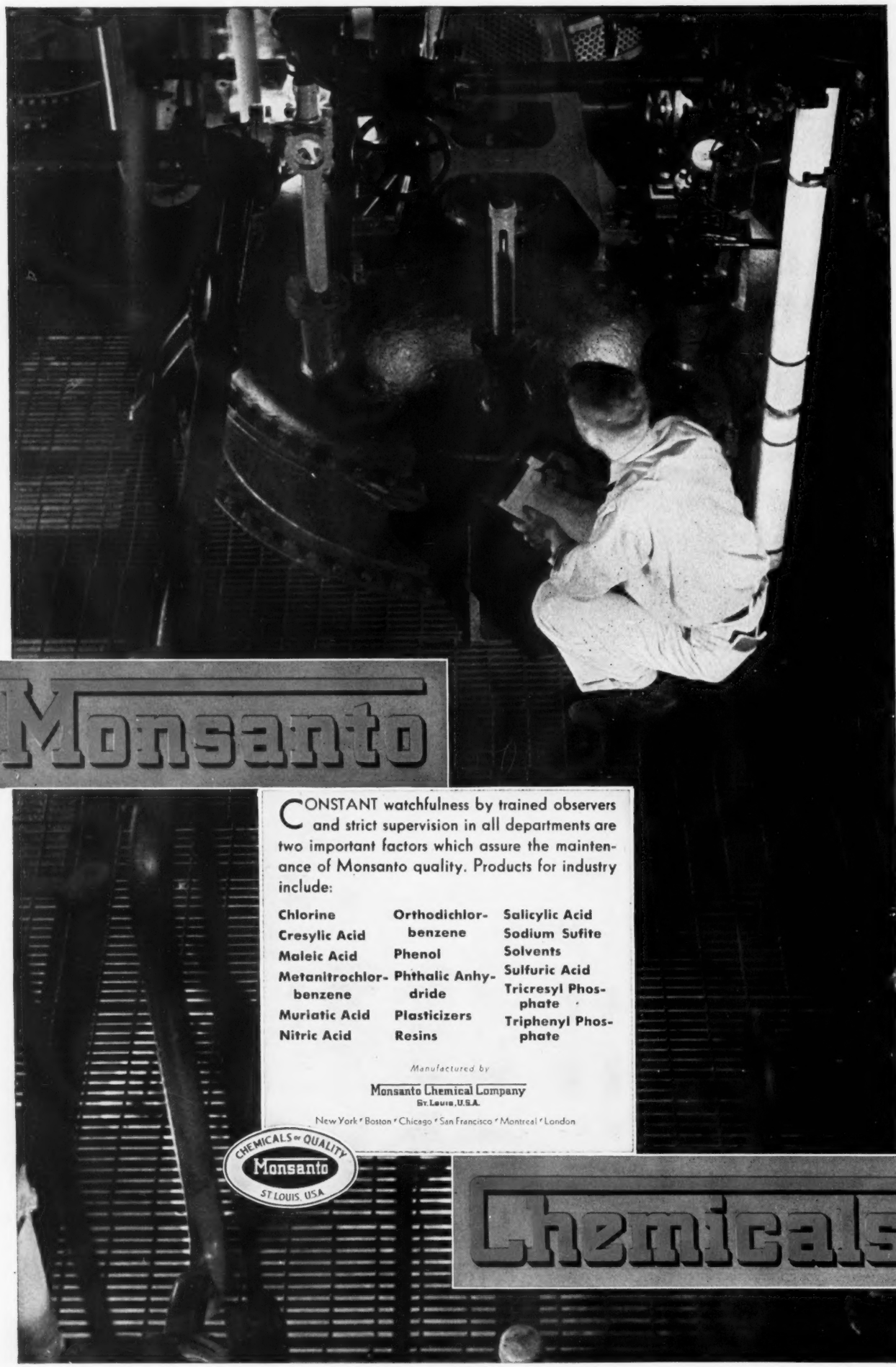




Majorie A. Stevens, daughter of O. N. Stevens, General Manager, Southern Alkali, in her stunning costume as the Duchess of Corpus Christi, at the recent San Antonio Fiesta.

To the left, William M. Rand (Merrimac) lighting a Murad (somebody must have asked for an alcohol contract). Center, Jim Switz (General Naval Stores), and below, "General Lee" Camp (Vice President, Monsanto) all snapped at the White Sulfur chemical sales conference.

W. J. Galliher ("Cy" to you) planning how to dispose of the 300 ton output of the new Corpus Christi plant.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Chemicals

Chemical Consumption

A digest of new products and processes in process industries for the user of chemicals.

Dispersion

by Dr. E. W. Pierce

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You are all familiar with the state of matter known as a solution, wherein the solid substance has united with the solvent so that the whole has become a uniform liquid. This is only true of certain salts and some other substances, for you may also make what is called a solution of glue, dextrine, egg albumen and a great number of natural organic substances. This second class of liquids is quite different from the true solutions in many respects. It will be found that a solution of common salt or alum will not freeze at 32° F., but that the freezing point will be lowered several degrees, while on the other hand the presence of one of the colloids, as the glue-like substances are called, will neither lower the freezing point nor raise the boiling point. I remember seeing a one per cent. solution of Rhodamine B extra, which I had left on a window sill over a week-end, when the thermometer reached zero; the entire contents of the glass beaker were frozen, but the ice was quite colorless, except a cylindrical column, about as thick as a lead pencil, in the center, into which all the dyestuff was concentrated. If we kept a solution of a colloid for a week, we would find that the top part had become quite weak, while there was a concentration of the material at the bottom, but if we kept a solution of salt for a full thousand years, providing it couldn't evaporate, it would be of the same uniformity throughout. Now the class of natural substances just mentioned are colloids, which have given the name to the entire group of materials in which the molecules, the smallest possible particle of that particular substance, are bound together in such large groups that they have lost their ability to move about freely. They are still just outside our field of vision, even with the ultra microscope, as we may only see them as a point of light, but not distinguish any form. Now there are some other forms of matter classed as colloids, but they are very much coarser in structure than the natural substances; I refer to fine chemical precipitates and to ordinarily insoluble substances which have been reduced to a high degree of fineness by mechanical means, as in a colloid mill. Materials of this sort are generally termed dispersions. In order to have a dispersion remain a dispersion, it must be held in that state by what is known as a dispersion medium, which is simply something that obstructs traffic, as it were, and prevents any motion in the liquid whereby various small particles may collect together and form large masses, which are actually precipitates. This collecting of the small particles into larger ones is called flocculation and it is this state of affairs that causes much of the troubles of the printer of vat dyes.

The maker of the fine vat dye pastes achieves a perfect dispersion of his product, but it is never proof against all adverse conditions. Let me call your attention to the most perfect dispersion made by nature; it is milk, a dispersion of butter-fat in water, casein and albumen, yet when we allow milk to stand there is a concentration of the fat at the top and we have cream; agitate this in a churn and we get a solid lump of butter-fat. A mechanically made vat dye paste is greatly affected by the vibration of the train or truck in transit and more so by the high-speed mechanical stirrers used to mix the printing pastes. A great drop in temperature, even though it does not reach the freezing point, will cause a flocculation and actual freezing will ruin the mass in a peculiar way. I remember seeing a barrel of vat dye that had frozen so as to burst the head of the barrel; it contained almost clear water, in which there were hard pellets of coloring matter as large as grapes and which could not be crushed with the fingers.

If a color mixer makes up his paste with all the ingredients except the dye and then adds a double vat paste and puts in the agitator, the chances are that the prints will be specky, but if he first disperses the paste still farther with the glycerine, then adds some thin gum and stirs more and later adds the hydro, potash and heavy gum, the chances are that he will have a smooth print. Many practical printers have said that a freshly made color is always 25 per cent. weaker than the same batch will be the next day. Why? There has been a full chance for the chemicals to diffuse into the fine spaces between the particles and to exert their full action on every microscopic particle.

In dyeing we have a free motion of the dye and its assistants, while in vat printing a complicated chemical reaction must take place at the same time in a minute globule of water, drawn by the glycerine from the steam atmosphere of the ager, alongside of which a dew drop is a veritable ocean. Therefore a fine state of division and a most intimate mixture is necessary for the best results.

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The advent of the fine or micro powders is a great step forward. Think what they mean; no more settling and stirring up, no more evaporation, no more crusts falling back into the barrel, constant strength, no danger of freezing and the same degree of dispersion as when they left the factory.

It is a positive fact that a large variety of shades may be made from the same quantity of the same vat dye by different handling and especially different printing pastes. The one that gives the strongest and brightest shade is the one which has fostered the most perfect state of dispersion. One cannot create strength that does not exist, but it is possible to have all the coloring matter fixed on the fibre and yet not have its full strength and brilliancy, just because the dye does not have its highest degree of dispersion, this same thing is spoken of by painters as covering power. The dyes furnished by the makers are now all well dispersed, but it is the task of the color mixer to keep them so and thus get the best value out of the dyes he uses.—*Summary of a talk before the National Association of Textile Printing Colorists.*

Textiles

Unshrinkable Wool

Wool Industries Research Association report discovery of commercial methods for adding this desired quality to wool fibres, in addition to possessing other outstanding qualities. Simultaneously it removes the prickly feeling long associated with wool. Treatment adds lustre to the wool, and can be applied with equal facility to loose scoured wool or knitted fabrics. Method to be kept secret for members of the Association, which holds full patent rights.

Neatsfoot Oil Substitute

By esterification of sperm oil a substitute for neatsfoot oil for textile purposes is made, according to G. P. 567,618. Example: fatty acids of sperm oil, after removal of the fatty alcohols by cooling to 4° C. and filtration, are esterified with glycerine. The triglyceride obtained has a saponification value of 98; iodine number of 82; solidification point of —20° C.; "cold test" figure of —7° C., and clouding point of —19° C.

Rubberizing Silk Fabrics

Fabrics to be treated in this way are immersed in water or aqueous solutions of scouring agents at a temperature below 100° C., as outlined in E. P. 403,394.

Waterproofing Vegetable and Animal Fibres

Treatment comprises use of an alkaline liquor, with or without a wetting agent, passed through a solution of soap in water or other solvent, and finally through a solution of salt of an alkaline earth metal or a metal of the magnesium group. E. P. 403,957.

Antiseptic Wetting Agents

Very good agents are obtained by mixing water-soluble mercury, silver or gold salts, which dissociate into metal ions, with aliphatic compounds which have a strong wetting and washing power, contain at least eight carbon atoms, an acid sulfuric or phosphoric ester or sulfonic acid group in an end position and form water-soluble salts with the said metals either alone or together with other substances which do not form insoluble compounds with the metal salts used. Such water-soluble metal salts are mercuric chloride, auric chloride, silver nitrate and the like. The disinfectant and antiseptic action of the salts not only remains unimpaired and in its full extent, but is usually increased.

The Month's New Dyes

Recent releases by General Dyestuff include Indanthren Printing Black T L Suprafix, which produces deep jet blacks on cotton and rayon, and in reductions, very pleasing shades of grey. The prints possess excellent fastness properties. Indanthren Olive GB Dbl. Paste has excellent fastness to light and weather, because of which quality it is especially recommended for dyeing awnings and for goods which have to stand severe light and weather exposure. Diazo Fast Green G L, a new homogeneous diazotizable dyestuff, is offered for developing with beta naphthol. Produces bluish green shades of good fastness to light washing and perspiration. In mixed fabrics it dyes cotton and rayon a uniform shade; acetate silk effects are left white.

The Fastusols, now in production in this country by General Aniline, are the Blue LBRRA, a Blue LGA, an Orange L5GA, and an Orange L3BA. As direct colors possessing more than ordinary fastness to light, this group is suitable for the dyeing of cotton and rayon materials where economy in operation is a requisite.

Sulfanthrene Black PR from the dyestuffs division of du Pont is a double paste possessing the fastness qualifications of vat colors and finds a number of special applications in textile printing.

Patents—Textiles

Wool fat dissolved in pine oil, benzene or carbon tetrachloride for delustering filaments from viscose solutions. No. 1,958,949. A. Lely, Aintree, Eng., to Amer. Enka Corp., Wilmington, Del.

Piperidine & ricinoleic acid to form an emulsifying and wetting-out agent. No. 1,957,674. W. Schrauth, Ger., to Handels A-G., Zurich, Switzerland.

For the production of colored discharge effects on textiles. No. 1,957,494. G. H. Ellis, Eng., to Celanese Corp., N. Y. City.

Amides of higher fatty carboxylic acids for improving textile fastness. No. 1,957,493. G. H. Ellis, H. C. Olpin & E. W. Kirk, Eng., to Celanese Corp., N. Y. City.

Metallic aldehyde & ketone sulfoxylates for textiles. No. 1,957,492. G. H. Ellis, Eng., to Celanese Corp., N. Y. City.

Formaldehyde sulfoxylate in paste for differential dye color effects. No. 1,957,491. C. Dreyfus & H. Platt, to Celanese Corp., N. Y. City.

Compound of the benzene series for improving penetration of textile reagents. No. 1,955,796. G. H. Ellis, England, to Celanese Corp., N. Y. City.

Sulfonated vegetable and animal oil for use on textiles. No. 1,955,766. E. & S. Pohl, Great Neck, N. Y. City.

Soap

Disinfectant Soaps

Silver-containing soaps which disinfect but do not discolor are made by mixing with soap metallic silver in the form of powder, foil, leaves, flakes or the like. The silver may be activated by superficial electrolytic oxidation or by treatment with hydrogen peroxide, permanganate, or other oxidizing agents. B. P. 395,570 lists several examples and also states that soluble or difficultly soluble silver compounds, and/or sodium perborate, sodium pyrophosphate, peroxide, or other substances containing active oxygen may also be added. Use of soaps containing colloidal silver compounds, e.g., silver potassium cyanide and $(AgNH_2)OH$, is referred to.

Spontaneous Ignition of Soap Powder

Heretofore attributed to the presence of free, unsaturated fatty acids, the spontaneous ignition of soap powder is now claimed by an author in *Deutsche Parfumerie Zeitung* to follow intense evolution of heat as a result of water absorption by the originally water-poor powder.

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Coatings

Beta-Naphthol in Soya-Bean Oil

Experiments by the Japanese chemist, M. Nakamura, establish the fact that beta naphthol has a dual effect—both facilitating and retarding the action of soya-bean oil, the reaction apparently depending upon the quantity used. In every case the original action seems to be an acceleration of oxidation, but if more than 0.2 per cent. of the naphthol is used, the eventual anti-oxidant action plays the greater part. At lower concentrations it acts as an oxidation-promoting agent during the total oxidation period of the soya-bean oil.

ASTM Specifications for Paints and Lacquers

Paint, varnish and lacquer manufacturers will be particularly interested in the report of Committee D-1 on Preservative Coatings for Structural Material which will be presented on June 26th as part of the program for the ASTM Thirty-Seventh Annual Meeting at Atlantic City. Report as outlined presents as tentative, new specifications for titanium barium pigment, for titanium calcium pigment, for titanium dioxide, for zinc sulfide, for high zinc sulfide lithopone and for amyl acetate (from fusel oil); also methods of test for mass color and tinting strength of dry color pigments and extensive revision of existing methods for tinting strength of white pigments. Submits tentative revisions of standard methods of routine analysis of dry red lead; of white linseed oil paints; of yellow and orange pigments containing chromium compounds, blue pigments and chrome green; also methods of sampling and testing shellac. Recommends adoption as standard, with revisions, of tentative specifications for shellac varnish and for centrifuged shellac varnish. Presents revision of tentative specifications for petroleum spirits (mineral spirits), and methods of testing nitrocellulose clear lacquers and lacquer enamels. Recommends adoption as standard of tentative revision of standard specifications for basic carbonate white lead. Discusses activities of subcommittees on accelerated tests for protective coatings, on varnish, on paint thinners, etc.

Grinding Medium for Aluminum Stearate

Use of toluol for this purpose has proved ideal, while a mixture of 50 per cent. toluol and 50 per cent. butyl acetate is a more practical medium. The flat effect depends on the concentration of stearate in the film, the solvent used, and the size of the stearate particle. The grinding time of aluminum stearate depends on the solvent used, initial and final particle size of the stearate, and amount of material to be ground. Summary of a talk by Francis J. Licata before the Detroit Paint and Varnish Production Club.

Eliminating Paint Smell

Several new aromatic materials which have been proved to be ideal for ending "paint smell," yet have no harmful effects whatever on the drying or wearing qualities of the paints, enamels or synthetic resin varnishes in which they are used, have been announced by Givaudan-Delawanna.

Patents—Coatings

Artificial leather; cotton fiber impregnated by latex bath and an aqueous solution of paraffin oil and coumarone resin. No. 1,958,821. K. Haarburger, Reutlingen, Ger.

Cell. nitrate undercoating, surfaced by cellulose ester with nitrogen compound to absorb all ultra-violet rays penetrating the atmosphere. No. 1,958,715. E. E. Richardson, to Eastman Kodak Co., Rochester, N. Y.

Adhering lacquer coating decomposable by sunlight and prevented by surface coating. No. 1,958,714. E. E. Richardson & C. J. Staud, to Eastman Kodak Co., Rochester, N. Y.

Cell. acetate coating with from ¼-10% diphenyl benzene guanidine. Light-filtering overcoating is absorbent of all wave lengths of ultra-violet. No. 1,958,711. T. F. Murray, Jr., to Eastman Kodak Co., Rochester, N. Y.

Coating, pyroxylin lacquer base under cell. acetate with ester of phthalic acid. No. 1,958,708. N. S. Kocher, to Eastman Kodak Co., Rochester, N. Y.

Pyroxylin lacquer base with overcoating of cell. acetate and tri-cresyl phosphate. No. 1,958,707. N. S. Kocher, to Eastman Kodak Co., Rochester, N. Y.

Protective basis of coating cell. acetate and propionate overcoating. No. 1,958,706. N. S. Kocher, to Eastman Kodak Co., Rochester, N. Y.

Article with cell. nitrate coating and overcoating of ¼ to 10% of phthalimide or p-amino benzoic acid. No. 1,958,683. C. J. Staud, to Eastman Kodak Co., Rochester, N. Y.

Coating composition, synthetic drying oil film forming agent. No. 1,958,418. W. S. Calcott & F. B. Downing, to du Pont & Co., Wilmington, Del.

For tinting, dyeing or backing photographic film. No. 1,957,888. K. C. D. Hickman, to Eastman Kodak Co., Rochester, N. Y.

Coating: chlorinated rubber, alkyl and aralkyl ester, and solvent. No. 1,957,786. W. Koch, to Hercules Powder Co., Wilmington, Del.

Varnish for vulcanized rubber, acyl peroxide & drying oil. No. 1,956,965. S. L. Strickhouser, to Naugatuck, Chem. Co., Naugatuck, Conn.

Different gradations in silver halide emulsion layers. No. 1,956,230. R. Schmidt, Ger., to Agfa Ansco Corp., Binghamton, N. Y.

Leather

Two-Bath Chrome Tanning

The following contribution to this subject is of timely interest. E. Stiasny and A. Papayannis (*Collegium*, 1934, 69) tried the effect of increasing the amount of hydrochloric acid from 2.5 per cent. to four per cent. for five per cent. bichromate; they also used 1.9 per cent. sodium chloride with the larger amount of acid. The result was that pelts treated in this way absorbed a maximum amount of chromium in the first half hour. Only chromic acid is absorbed and since this acid is liberated by the use of the larger amount of acid, more is absorbed by the pelt in the latter case. Four per cent. acid represents the amount necessary to liberate all the chromic acid, but the residual liquor and the liquor pressed out of the treated pelts was shown to contain monochromate. The effect of salt additions is explained by the following equation:

$$H_2Cr_2O_7 + 2\ Na\ Cl \rightleftarrows Na_2Cr_2O_7 + 2\ HCl$$

with the result that less chromic acid is taken up by the pelt and more hydrochloric acid. A more basic chromium salt is formed in the leather when the acid is added more slowly, in three portions at intervals of one half hour. The hydrochloric acid in the reduction bath may be replaced by formic acid, but not by weaker organic acids.

Tanning Agents

U. S. P. 1,897,124 covers the use of tanning agents identified as sulfonation products of pyrogenic decomposition products of rosin acids, i.e., such as abietic acid, or their halides. Derivatives of these sulfonic acid bodies, such as the formaldehyde or benzaldehyde condensation products or salts of such products, are included. The water soluble tanning agents are used with vegetable tanning extracts in the tanning of hides.

Leather Deterioration

In the course of experiments on testing leathers with the peroxide test it was observed that holes were burnt through unprotected leather only in places where particles of soot had accidentally fallen. These particles were found to contain six per cent. of iron. Catechol- and pyrogallol-tanned leathers were shown containing no iron, 0.01 per cent. Fe and 0.10 per cent. Fe, one group of leathers being low in water solubles as received from the tanner and one group containing five per cent. added Rochelle salt, all being treated by the peroxide tests. The conclusions were:

that the presence of iron accelerates the rotting of pyrogallol- and catechol-tanned leathers. The rotting of leather containing iron is retarded by Rochelle salt in the case of catechol-tanned leather, and almost completely prevented in the case of pyrogallol-tanned leather. Summary of a paper on Iron as a Cause of Leather Deterioration, read by R. I. Innes, at a meeting of the British Section of the International Society of Leather Trade's Chemists.

Patents—Tanning

Application to tanned leather of layers of a composition of China wood oil with cellulose ester. No. 1,959,112. C. G. Shaw & J. Hoffman, Toronto, Can.

Paralydehyde and paradol bath for treating hides. No. 1,957,020. H. C. Reed, Stamford, to Niacet Chemicals Corp.

Paper

Paper Sizing

E. P. 403,095 covers a process whereby highly stable sizing emulsions containing rosin in a fine state of dispersion are produced by introducing simultaneously, and as separate streams, molten rosin and an aqueous dispersion of a protective colloid into a high-speed rotary pump or a colloid mill. Casein, formaldehyde-casein dispersed in an alkaline medium glue, gum arabic, agar-agar, Irish moss, etc., may be used as protective colloids, and colloidal or peptized clays may be incorporated in the emulsion.

Chemical Specialties

Fly Spray Ingredients

The usual pyrethrum extractives in petroleum distillate for household use and the boiling range of some possible fractions are given:

	Initial Boiling Point	*End Point*
Example 1	300 to 310° F	400 to 410° F
Example 2	400 to 410° F	620 to 630° F
Example 3	500 to 540° F	650 to 660° F
Example 4	360 to 370° F	490 to 510° F

Number one, usually referred to as heavy naphtha or Stoddard solvent, while giving reasonably fair controls when sprayed directly on insects, volatilizes too rapidly under usual conditions, since its rapid evaporation fails to hold it suspended in the air for a sufficiently long period to have the pyrethrum particles come into contact with the insects. Some increased fire hazard is also present with these fractions, especially if the flash point is much below 120° F.

Example two representing the usual commercial grade of kerosene does not have sufficient lifting power when sprayed into the air and contains some heavy ends that are slow to evaporate, therefore does not give full carrying power for the pyrethrum particles.

Example three is a light, close-cut fraction of gas or fuel oil and contains such heavy body and end fractions that its use would result in complaints from grease spots and too slow evaporation. In effectiveness, it would be somewhat less than example one, because its heavy body would carry the toxic oil droplets downward, with resulting poor results.

The most satisfactory results are obtained with a close cut fraction of petroleum distillate, such as given under example number four, for the reason that when it is vaporized into the air, it will remain suspended in a finely divided mist for a maximum length of time. This increased contact period allows suspension of the oil droplets for the longest time practical and can account for increased final kills of some four to eight per cent. (expressed in Peet-Grady results) over the other types, because the insects have a longer period in which to fly or move through the suspended vapors from removed or protected places. It is, however, desirable to obtain as many direct "hits" as possible when spraying.—*The Givaudanian*, April '34.

Agricultural Chemicals

Weed Destroyer

The use of kainit and its effect as a weed-killer has been the subject of research by C. H. Huseman (*Zeits-Pflanzenern. Dungung*) who found that the activity of the material increased with its fineness and dryness. Moreover, the higher the chlorine content of kainit, the greater is its value as a weed-killer.

Soil Disinfectant

Iron carbonyl has been found to be superior to carbon bisulfide for this purpose. Fr. P. 403, 340 states that it is not necessary to use metal carbonyls in the pure condition, but they can be used as mixtures or diluted with suitable solvents.

Sodium Chlorate as a Weed Killer

Several recent digests report effective progress in the use of sodium chlorate as a weed-killer, cost of which treatment is very low. Tests carried out by Loouis, Smith, Bissey and Arnold (*J. Amer. Soc. Agron.*, Nov. 1933, 724-739), at a temperature of 40°C., and soil humidity of 24 per cent., shows that the toxicity of sodium chlorate in the soil sinks to nil at the end of six weeks, while in a fresh and relatively dry soil the salt maintains its toxic properties for more than two years. Results in the wet soil are due to the decomposition of the chlorate with the liberation of oxygen and the production ot sodium chloride. It has also been tried out in cereal cultivation in the endeavor to secure a comparison with sulfuric acid, with the finding that the chlorate process is more economical than the sulfuric acid, and easier to effect. Dr. M. A. H. Tinker, (*J. Roy Hort. Soc.*,. Feb. 1934, 59, 707), states that it ceases to have any action after about seven months from the time of application, thus there are no harmful effects as with arsenical weed-killers. From other literature it appears that a 10 per cent. solution (1 lb. per gallon of water) is required for the eradication of large grasses and docks; a five per cent. solution for herbaceous weeds and small grasses, while small annual weeds require a 2½ per cent. solution.

Comparison of Fertilizer Value of Chilean and Synthetic Nitrate of Soda

Experiments on a large scale were recently carried out in the department of the Ardennes, in order to compare fertilizing value of Chilean nitrate of soda and synthetic nitrate of equal nitrogen content. Experiments were carried out over an area of about 2½ acres as nearly homogeneous as possible. Usual dressing of farmyard manure was applied, plus nearly ½ ton of superphosphate of lime (16 per cent.) and about 300 lbs. muriate of potash. Then about 100 lb. of Chilean nitrate of soda (15 per cent. nitrogen content) was spread over 4½ roods, another 100 lbs. of synthetic nitrate of soda on a further 4½ roods, the remaining area not receiving any nitrate. Conclusions

drawn from these experiments were that the two kinds of nitrate produced practically identical results. Importance of this finding lies in the fact that, owing to the import quota on Chilean nitrate and a consequent diminution in its use, the farmer need have no fear of using the synthetic material. *The Fertilizer, Feeding Stuffs & Farm Supplies Journal* (London, Eng.)

Patents—Agricultural Chemicals

Sodium oleate-nicotine insecticide. No. 1,958,407. T. J. Headlee, to Tobacco By-Products & Chem. Co., Richmond, Va.

Cupric oxide and lime fungicide. No. 1,958,102. M. C. Goldsworthy, Washington, D. C., to Gov't and People of the U. S.

Process for a compound fertilizer. No. 1,957,350. J. P. L. Remy-Neris, to Soc. Chim. de la Grande Paroisse Azote et Prod. Chim., Paris.

Mfr. of sulfate of ammonia. No. 1,957,268. G. Hiller, Essen, Ger., to Koppers Co., Pittsburgh, Pa.

Simultaneous mfr. of amm. phosphate & other fertilizers. No. 1,956,926. F. Mitteau, to S'te d'etudes Scien. et Indus., Paris.

Fluorine compound as parasiticide. No. 1,955,891. P. L. Salzberg & F. M. Meigs, to du Pont & Co., Wilmington, Del.

Miscellaneous

Castor Oil Lubricants

By heating *in vacuo* at about 250° C. for eight to twelve hours in the presence of tin oxide, the direct conversion of castor oil into a lubricant miscible with mineral oils at ordinary temperatures is brought about. In F. P. 760, 783, glycerol distills over as a by-product and the residue, lacking in drying oil qualities, is found to be miscible with mineral oils. It improves their viscosity curves even when present in small proportion. In working out this process it is recommended to pass the oil-catalyst mixture—in which the catalyst is kept in suspension by a jet of steam or a stream of inert gas—through a heated vacuum apparatus, the rate of flow being so adjusted that the issuing modified oil possesses the desired properties.

Relieving Odor of Exhaust Gases

A process for ameliorating the smell of the exhaust gases of internal combustion engines is given in B. P. S. 404,046, whereby an agreeable smell can be imparted to the exhaust gases of internal combustion engines using any desired type of fuel, such as gasoline, light petrol, benzene, medium heavy or heavy petrol, paraffin oil, heavy oil or gases such as illuminating or wood gas by adding in the case of liquid fuels small amounts, namely 1.0 gram or less per litre of an artificial musk compound and/or an arylalkylketone, which have in common the property of not being burnt under the conditions prevailing in internal-combustion engines and are adapted to impart to the exhaust gases a pleasant odor which enables the pungent smell of the half burnt oil, or oil-petrol mixture, to be modified as desired.

Anti-Mildew Agent

An anti-mildew agent for textiles is produced by treating an arylamide of an O-hydroxybenzoic acid or its alkali metal salt with an aqueous solution of a salt of mercury, lead, copper or zinc. The insoluble heavy metal salts are ground to a fine powder and usually diluted with an inert material.

Novel Use for Dry Ice

Dry ice, at a temperature of 112° below zero, may come to the assistance of engineers in securing a shrink fit of mechanical parts, according to W. H. Swanger, Mechanical Metallurgy Division, Bureau of Standards. The converse method of contracting the pin or shaft by cooling it in liquid air or solid carbon dioxide has received but little attention, probably because most engineers believed the plan was not commercially practicable. Now dry ice as an easily transported refrigerant has put the proposition on an entirely different basis.

Process of Gas Dehydration with Glycerine

Continued tests with this process at the Luton Gas Works are described by A. F. H. Knowles and R. Summerson in the *Gas Journal*, Mar. 28, '34. The first five million cubic feet per day plant operating by this process has now been at work at Luton for over a year, and it is said that all the expected advantages have materialized. The plant is clean, compact, and easy to work, total operation costs being under one farthing per 1,000 cubic feet. There has been no corrosion, no pumping troubles, and no sludging, and the surrounding district has benefited very considerably from the dry gas, with its improved service.

Solid Alcohol for Fuel Use

An absolute monohydric alcohol, such as ethyl alcohol, mixed with nitrocellulose forms the basis of a recently patented method of preparing a solid alcohol fuel.

The nitrocellulose, insoluble in the absolute alcohol at ordinary temperatures becomes soluble when the alcohol is chilled to low temperatures. In this process a mixture of nitrocellulose and absolute alcohol is chilled to approximately —20° C. and a similar amount of aqueous alcohol, chilled to approximately the same temperature, is added. The mixture solidifies when allowed to warm to atmospheric temperature.

Wetting Agents

According to a recent English patent, highly-sulfonated products are obtained by treating acetylated castor oil or acetylated ricinoleic acid dissolved in liquid sulfur dioxide with oleum. They are said to have high wetting powers.

Patents—Miscellaneous

Petroleum

Distillate petroleum products and treatments required. Nos. 1,959,315-7. Rather, Beard and Reiff, to Socony-Vacuum Corp., N. Y.

Destructive hydrogenation of distillable solid carbonaceous material. No. 1,959,175. M. Pier, Winkler & Wissel, Ludwigshafen, to Standard-I. G. Co., Linden, N. J.

Lubricating oil; using halogenated or sulfur chlorinated amides of aliphatic acids. No. 1,959,054. A. Henriksen & B. H. Lincoln, to Cont'l Oil Co., Ponca City, Okla.

Conversion of methane into liquid hydrocarbons. No. 1,958,648. C. Steigerwald, to I. G. F., Frankfort, Germany.

Calcium salts from sulfonation of petroleum oils. No. 1,958,630. H. Limburg, Amsterdam, Netherlands, to The Patent & Licensing Corp., N. Y. City.

Absorbing olefines in strong acids, under ester-forming conditions. No. 1,958,578. H. W. Huijser & J. A. van Melsen, to N. V. de Bataafsche Petr. Maatschappij, The Hague, Holland.

Valuable liquid products from destructive hydrogenation of carbonaceous material. No. 1,957,787. Krauch, Pier & Winkler, Ger., to Standard-I. G. Co., Linden, N. J.

Process and apparatus for the conversion of heavy oils and of soda-treated tars into lighter products. Nos. 1,957,648-9. E. Houdry, Paris, to Houdry Process Corp., Dover, Del.

Trade mark, "Vistone," for increasing the load carrying capacity of lubricating oils. No. 348,047. Stan. Oil Dev. Co., Linden, N. J.

Trade mark, "Paratone," chem-compound for improving the viscosity of lubricating oils. No. 348,045. Stan. Oil Dev. Co., Linden, N. J.

Concentrated fluid aqueous asphalt emulsion. No. 1,956,779. J. W. Sparks, to Stan. Oil Co., Chicago.

Treating petroleum sludges carrying green organic acids. No. 1,956,592. K. S. Ramayya, Brooklyn, N. Y.

Cellulose

Waterlaid felt impregnated by non-cellulosic binder. No. 1,958,976. G. A. Richter, to Brown Co., Berlin, N. H.

Cellulose in solution, from thermoplastic treatment. No. 1,958,376. N. C. Ward, to Anderson-Tully Co., Memphis, Tenn.

Addition from kerosene-gasolene group to solvent dissolving cellulose acetate for filament. No. 1,958,238. C. Dreyfus, to Celanese Corp., N. Y. Appl., 1928.

Seasoning sheet pyroxylin carrying the solvent. No. 1,958,140. G. C. Gress, to Fiberloid Corp., Indian Orchard, Mass.

Carbon tetrachloride seasoning of pyroxylin sheets containing a solvent. No. 1,958,136. G. I. Esselen, to Fiberloid Corp., Indian Orchard, Mass.

Adhesive of boric compound of alkyl glycol on cellulose ester plastic sheet in laminated glass. No. 1,958,013. Geo. H. Murray, Nixon, N. J.

Cellulose organic ester with dibenzyl ether of diethylene glycol. No. 1,957,878. S. J. Carroll, to Eastman Kodak Co., Rochester, N. Y.

Cellulose acetate composition. No. 1,957,868. C. S. Webber & C. J. Staud, to Eastman Kodak Co., Rochester, N. Y.

Isometric cresyl toluene sulfonates in cell. acetate composition. No. 1,957,861. E. R. Taylor, to Eastman Kodak Co., Rochester, N. Y.

Cell. acetate, ethylene chloride and plasticizer, in clear solution. No. 1,957,857. C. J. Staud and L. M. Minsk, to Eastman Kodak Co., Rochester, N. Y.

Mfr. of mixed cellulose esters. No. 1,957,856. C. J. Staud & C. S. Webber, to Eastman Kodak Co., Rochester, N. Y.

To reduce viscosity of nitrocellulose. No. 1,957,180. M. G. Milliken, to Hercules Powder Co., Wilmington, Del.

Metals

Use of carbon disulfide to prevent oxide-nitride skins on pouring molten magnesium. No. 1,959,297. E. O. Barstow, to The Dow Chem. Co., Midland, Mich.

Casting mold of silicates of zirconium and sodium, and dioxide of silicon. No. 1,959,179. Foster Dee Snell, to Essex Foundry, New York.

Hydrolytic precipitation of titanium from H_2SO_4 solution. No. 1,957,528. W. J. Cauwenberg, to Titanium Pig. Co., N. Y. City.

Electrolytic production of magnesium. No. 1,957,284. V. Obiedoff, to S'te de Produits Chim. des Terres Rares, Paris.

For inhibiting the nitridation of magnesium. No. 1,956,971. E. O. Barstow, to Dow Chem. Co., Midland, Mich.

Melting copper in presence of sodium tetraborate and chloride, and ammonium chloride. No. 1,956,553. A. D. Atkin, Woodland, Calif.

Rubber

Rubber Coagulants

Acetic, once the most generally used rubber coagulant in the Far East, has largely been supplanted by formic costing about half as much as the former. Introduction of a cheaper acetic by Jap producers was largely nullified by a weaker and cheaper but thoroughly satisfactory Jap formic acid. Sodium silico-fluoride is only used slightly. It is most efficient with very dilute latex and, unfortunately, separates in the aqueous solution, forming hydrogen fluoride, which attacks aluminum. Sugar has been tried but its effectiveness is not satisfactory. Alum is used only by natives.

Dispersing Agent

The problem of getting compounding materials properly dispersed in water involves complications that do not occur in dry mixing, since the dry powders are usually insoluble in water and are not wetted properly by the latex. Darvan, developed for overcoming this fault by Dewey and Almy, is a water solution of a synthetic organic chemical, containing about 40 per cent. of dry, active material. It is neutral or slightly alkaline in reaction and non-toxic, with no discoloring effect on the finished article. Has no effect on rate of cure or ageing of rubber compounds. Does not cause frothing, and does not ferment, putrefy or mold.

Patents—Rubber

Age resisting rubber compound. No. 1,959,110. W. Scott & H. G. Byers, to Rubber Service Labs., Akron, O.

Dihydroxy-diphenyl-methyl-methane to increase resistance of rubber to aging. No. 1,958,929. R. L. Sibley, to Rubber Service Labs., Akron, O.

Age-resisting rubber product. No. 1,958,928. Winfield Scott, to Rubber Service Labs., Akron, O.

Method of vulcanizing rubber. No. 1,958,924. W. A. Moore, to Rubber Service Labs., Akron, O.

Pine tar, stearic acid or oleic acid in method of compounding rubber. No. 1,958,745. H. A. Endres, to Wingfoot Corp., Wilmington, Del.

Better rubber substitutes in vulcanized solidified products from fatty oils. No. 1,957,437. L. Auer, Budapest, to J. Randolph Newman, Trustee, Washington, D. C.

Fibrous material associated with casein and rubber. No. 1,957,301. M. C. Teague and N. H. Brewster, to Naugatuck Chem. Co., N. Y.

Emulsion of plasticized rubber. No. 1,956,543. L. Kirschbraun, to The Pat. & Licensing Corp., N. Y. City.

Alcohol-formaldehyde-acetone process of coating fabric gloves with rubber dispersion. No. 1,955,840. G. W. Trowbridge, to Dunlop Rubber, Birmingham, England.

Company Booklets

C182. American Dyewood Co., 100 E. 42nd st., N. Y. City. "Logwood—On Silk" is a valuable treatise, by H. R. Tisdale on present day methods of applications of logwood. The practical dyer and textile chemist will find in these pages in concise form the best proceures. It is, indeed, a textbook on the subject.

C183. American Dyewood Co. "Logwood—On Wool"—is a companion to "Logwood—On Silk" just reviewed above and the same remarks apply.

C184. Bakelite Corp., 247 Park ave., N. Y. City. *"Bakelite Review"* for April contains an even greater number of new, novel and interesting uses of various Bakelite products than is generally customary. So varied have the uses for plastic materials become that it is advisable for practically all industries to watch for developments in the molded and synthetic resin field. One splendid way to do this is to receive the Bakelite Review regularly.

C185. Columbia Alkali Co., Empire State Bldg., N. Y. City. New booklet lists products of Columbia Alkali and gives important data on packaging, uses, consumption in various industries, etc. Users of any form of alkali should have the booklet for reference.

C186. E. I. du Pont de Nemours & Co., Wilmington. May issue of the *Du Pont Magazine* features an article on "Fast and Fugitive Colors" by well-known George H. Johnson, director of research, American Institute of Laundering; another article on better painting results in mills, plants, etc., by Donald Bauder; a page of photographs of du Pont and Grasselli chemical specialties dressed up in new, attractive containers; a very interesting article on "Some Unusual Applications of Cellophane."

C187. E. I. du Pont de Nemours & Co. (R. & H. Chemicals Division). A new leaflet briefly describes various precious metal cyanides made by R. & H. for gold and silver electroplating.

C188. General Plastics, North Tonawanda, N. Y. May Durez Molder is just as full of real news and trade gossip as usual. Its snappy editorial comment is refreshing.

C189. General Plastics. *Closure News* presents the most novel new packaging jobs "topped" off with "Durez" tops.

C190. Givaudan-Delawanna, Inc., 80 5th ave., N. Y. City. *The Givaudanian* for April discusses "The Right Distillate in Your Fly Spray."

C191. Hercules Powder Co., Wilmington, Del., *Hercules Mixer* for April is devoted almost exclusively to personnel and personal news.

C192. Industrial Chemical Sales Co., 230 Park ave., N. Y. City. "Activated Carbon—The Modern Purifier" is, in reality, a textbook on activated carbon, origin, uses, technical data, etc. Those in the sugar, syrup, fats, oils, dry cleaning, water purification, chemical and pharmaceutical fields will find this booklet invaluable.

C193. Innis Speiden & Co., 117 Liberty st., N. Y. City. A new 32-page manual on "Larvacide." Book, however, is really a fumigation manual containing a wealth of information for cereal chemists, elevator superintendents, millers, etc. A specially note-worthy feature is the generous use of photographs showing HOW to do the fumigation job properly.

C194. Innis Speiden & Co., May issue of *Chemical Bulletin* in addition to listing Innis Speiden products contains valuable and timely buying hints for purchasers of chemicals, waxes, gums, etc. Those desiring this bulletin regularly should send such a request either to this paper, using the coupon below, or to the main office or a branch office of Innis Speiden.

C195. Kessler Chemical Co., Chrysler Bldg., N. Y. City. A 4-page circular describes in detail "Kesscol M-A" which was developed to meet the demand for a more economical low boiling solvent.

C196. Magnus, Mabee & Reynard, 32 Cliff st., N. Y. City. May-June catalog and price list on essential oils, aromatic chemicals, certified colors, etc., is now available.

C197. Mallinckrodt Chemical Wks., St. Louis. May price list of medicinal, photographic, analytical and industrial chemicals shows several important price revisions.

C198. Merck & Co., Rahway, N. J. May price list is being distributed.

C199. Monsanto Chemical Co., St. Louis. *Monsanto Current Events* for April features an article by H. M. Harker, assistant general manager of sales, on termites and how damage done may be concealed by clever engineering methods.

C200. Parker Rust-Proof Co., Detroit, Mich. "A Common Cause of Paint Failure and its Scientific Prevention" is an interesting and instructive 4-page booklet.

C201. Pfaltz & Bauer, 300 Pearl st., N. Y. City. A 14-page booklet reports on Gruebler-Holiborn stains and preparations for microscopy, including the Bayer-Meister-Lucius standardized and certified stains, new multiple stain combinations and stains for special purposes, such as textile tests, detection of gasoline in arson, etc.

C202. Philadelphia Quartz Co., 121 S. 3rd st., Philadelphia. May *P's & Q's* among other things discusses the recently patented new crystalline silicate of soda, referred to as sodium sesquisilicate.

C203. Rossville Commercial Alcohol Co., Terre Haute, Ind. *Alcohol Talks* for April discusses the most interesting topic "ardent spirits"—more commonly known (since prohibition, at least) as whiskey.

C204. R. T. Vanderbilt Co., 230 Park ave., N. Y. City Durite No. 1301 is a new leaflet in the series on "Durite" (phenolic varnish resin) and discusses "The Cost of Mixtures of Durite No 1301 and Ester Gum."

Chemical Industries,
25 Spruce Street, New York City.

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C. June

Chemical Production

A digest of plant management, design, equipment and containers for the makers of chemicals

Capitalizing the Responsibilities of Corporate Stewardship

By Edgar M. Queeny

IT is my personal conviction, and it has been justified by the experience of our company, that our stockholders in the aggregate are valuable salesmen of Monsanto products and ambassadors of Monsanto goodwill. This may be due to the fact that we give our stockholders complete and detailed information concerning their company. We have long followed this policy because Monsanto management believes that they should be kept posted as to what management is accomplishing with the money stockholders have invested.

Edgar M. Queeny

There has been so much written and said about the "corporate stewardship of stockholders' investments" that the phrase has come to have a hollow ring. Nevertheless, we have tried to make it ring true to Monsanto stockholders. We firmly believe that the responsibilities of management's stewardship are large. This is the philosophy of our relations with stockholders, and upon it are based the various means we use to maintain intimate relations between stockholders and management.

All new buyers of Monsanto stock are sent a personal letter signed by me, welcoming the new stockholder as an investor in Monsanto. The new stockholder is made aware that Monsanto management is interested in him and his participation in Monsanto's development. A copy of the last annual report and an illustrated booklet entitled "How Monsanto Serves," accompany this letter. This booklet and report, and the information in the letter, give the new stockholder a rather comprehensive idea of the nature of Monsanto's business, its products, and the philosophy of its management.

This letter is but the beginning of the relationship Monsanto maintains with its stockholders. Our annual report, of course, provides an excellent medium and we make sure that it presents to stockholders something more than mere balance sheets. In a letter sent with the annual report, I explain at length the policies and ambitions of Monsanto management, and set forth what has occurred during the year just ended. Our annual reports have dealt with various subjects of stockholder interest, such as labor relations, workers' bonuses, safety and health records, methods of good housekeeping in our plants, new products, and other matters not always found in annual reports to stockholders.

We try to make the annual report attractive through the use of photographs, charts, graphs and a pleasing general layout. We want the stockholder to read the report from cover to cover, not merely to glance through the balance sheets. We want him to become more intimately acquainted with Monsanto as an institution.

In addition to the annual report, we issue two quarterly reports and a semi-annual report. These are less elaborate, but again the President's letter serves the purpose of telling stockholders what has taken place since the last report and of giving them other pertinent facts concerning the company in which they have an invested interest.

The mailing of dividend checks affords another opportune occasion to give stockholders information. We make it a practice to enclose a pamphlet describing newly introduced Monsanto products, or a letter discussing various aspects of general conditions as they affect Monsanto, such as taxation, proposed Federal legislation, or other subjects that bear directly upon Monsanto's welfare.

As soon as anyone becomes a holder of Monsanto stock, his name is placed on the mailing list of Monsanto Current Events, published by-monthly. This house organ also goes to all employees and customers. The intent of its threefold function is to keep all who receive it informed concerning Monsanto and its activities. It is not an easy job to accomplish this threefold objective. But we have found from experience that it can be done. Stockholders and employees alike are interested in employee relations and activities. We recently changed the format of Current Events and its editorial content to increase the interest of all to whom it is sent, not forgetting employees.

We endeavor to make our house organ interesting and informative. We realize that so far as stockholders and customers are concerned it has to compete with regular magazines as well as with other house organs. Due to the wide variety of our products and the interesting uses to which they are put, the task is not as great as it might

be if we had only one or two products which did not lend themselves so well to reader interest.

We know from reactions that Current Events is favorably received by employees, stockholders and customers. We consider it one of our best media for institutional advertising, although there is no advertisement in the magazine except a full-page back cover which usually deals with specific Monsanto products.

There is one thing we do that I believe is rare in stockholder relationship. We mail the minutes of stockholders' meetings to all stockholders. This policy has been of great aid in establishing proper relations between our company and its stockholders.

When a stockholder disposes of his stock, he is sent a letter signed by me expressing regret and the hope that he soon will be back in the fold. Response to these "good-by" letters shows that we have on the whole an interested group of stockholders, and that our methods have worked to the mutual advantage of stockholders and management.

Perhaps we stress the intimate contact between stockholders and management because of the nature of our business. Our products are not sold to the retail trade but to manufacturers who use them in their own production processes. By keeping stockholders informed about products and Monsanto activities in general, we have built up a large number of good salesmen for our products as well as a loyal group of stockholders—a group that, incidentally, constitutes a valuable potential source of new capital if desired for expansion purposes.—Executives Service Bulletin, May, 1934, published by the Metropolitan Life Insurance Co.

Heavy Chemicals

An outstanding example of the changes in the methods of manufacturing industrial chemicals during past 10 years is furnished by acetic which is the most important organic acid. Although industry was aware of a change in production methods, extent to which new methods compete with original process has not been known. Tariff Commission has recently accumulated such statistics and they show, in terms of 100% acetic, that production of acetic and derivatives by these new methods has increased 63 million lbs., and production of acetic from domestic calcium acetate by the original process has declined 58 million lbs., from '27 to '33 inclusive.

Originally, and for many years, only source of acetic was calcium acetate (acetate of lime), made by neutralizing pyroligneous liquors obtained in distillation of hardwood and which, when treated with sulfuric, yields acetic. Within past 10 years, and due largely to increasing demands of the cellulose acetate industry for acetylating agents, other methods have been developed whereby acetic of suitable strength and purity has been made at lower cost than from calcium acetate. These new methods embrace synthesis, oxidation of ethyl alcohol from fermentation of molasses, and direct production by solvent extraction from pyroligneous liquors without 1st making calcium acetate.

Data secured by the Tariff Commission show the degree in which the original calcium acetate process is giving way to these newer processes. They cover 7 consecutive years' primary production of acetic and derivatives by various methods. Derivatives are those made directly without intermediate recovery of acetic, and include acetic anhydride, and ethyl acetate. Production of acetic including acid equivalent of direct production of derivatives cannot be shown by methods, except for acetate of lime, without revealing confidential information. Production data, in terms of 100% acetic, are summarized:

(Thousands of pounds)

Year	Primary production: From calcium acetate [1]: Dom. cal. acetate [2]	Imp. cal. acetate [3]	Total	By other methods [4]	Total [4]	% of total represented by: Calcium acetate	Other [4]
'27	82,966	3,939	86,905	15,488	102,393	84.9	15.1
'28	87,217	5,146	92,363	20,146	112,509	82.1	17.9
'29	71,273	14,048	85,321	42,443	127,764	66.8	33.2
'30	37,292	7,920	45,212	44,404	89,616	50.5	49.5
'31	33,482	0	33,482	51,703	85,185	39.3	60.7
'32	22,940	0	22,940	48,516	71,456	32.1	67.9
'33	25,294	150	25,444	78,519	103,963	24.5	75.5

[1] Converted on the basis of one pound of 100 percent acetic acid to 1.75 pounds of 80 percent calcium acetate.
[2] Based on monthly reports of the Bureau of the Census and adjusted for stocks on hand at beginning and end of year.
[3] Assuming conversion to acid during year of importation.
[4] Including acetic acid equivalent of derivatives.

In addition to quantities shown in the above table, substantial quantities of weak acid, recovered from the acetylating operations of the cellulose acetate rayon industry, are concentrated and re-used. Of the total production shown in the above table, a substantial quantity is consumed by manufacturers of rayon and of derivatives of acetic. It is reported that these rayon producers have never used acetic acid made from calcium acetate.

The 70% decline from '28 to '33, inclusive, in production of acetic made from domestic calcium acetate, has been caused more by increased domestic production by the new methods than by increased imports. It is believed the present production of actic from calcium acetate could be materially increased if the hardwood distillation industry could dispose of the co-product charcoal in sufficient volume and at such prices as to permit disposal of the calcium acetate in competition with acetic acid made by the new methods.

Imports, almost entirely of synthetic acid from Canada, are dutiable at 1⅜ cts. per lb. if containing not more than 65% acetic acid, and at 2 cts. per lb. if containing more than 65% acetic acid. Trend of imports has been from weak to glacial acid. Primary production and imports of acetic acid and of its derivatives, apparent consumption, and ratio of imports to apparent consumption, all in terms of 100% acetic and exclusive of exports, are summarized:

Year	Primary production [1]	Imports: Acid	Imports: Derivatives	Apparent consumption	Ratio of imports to apparent consumption Percent
'27	102,393	8,183	3,936	114,512	10.6
'28	112,509	13,964	4,288	130,761	14.0
'29	127,764	21,742	5,829	155,335	17.7
'30	89,616	18,152	792	108,560	17.5
'31	85,185	13,152	503	98,840	13.8
'32	71,456	13,950	666	86,072	17.0
'33	103,963	32,734	1,226	137,923	24.6

[1] Including acetic acid equivalent of derivatives.

Patents—Chemical

Odorless sulfur soap. No. 1,957,918. Tomoichiro Tanaka, Tokyo, Japan.

Process for catalysts, rejecting acid constituent from solid metal compounds. No. 1,959,313. W. E. Vail, to du Pont & Co., Wilmington, Del.

Process & apparatus for recovering barium sulfates from barytes. No. 1,959,305. M. J. Rentschler & W. R. Teavons, Ohio.

Phenyl-phenol from halogenated diphenyl. No. 1,959,283. E. C. Britton, to The Dow Chem Co., Midland, Mich.

Phosphoric acid reaction compounds from terpene & hydroaromatic alcohols. No. 1,959,228. J. W. Blagden & W. E. Huggett, Loughton, and London, England.

Process for preparation of catalysts. No. 1,959,189. J. C. Woodhouse, to du Pont & Co., Wilmington, Del.

Production of adhesives. No. 1,959,185. H. Wappes & H. Klingenberg, to I. G. F., Frankfort, Germany.

Process of treating phosphates. No. 1,959,086. L. B. Skinner, Denver, Col.

10% minimum of phosphorous sulfide in thermoplastic production of sulfur. No. 1,959,026. W. A. Hamor & W. W. Duecker, to Texas Gulf Sulphur Co., Bay City, Tex.

Concentrating dilute lower aliphatic acids. No. 1,958,898. G. P. Lunt, to E. B. Badger & Sons, Boston.

Derivatives of mercapto aryl thiazoles. No. 1,958,770. L. B. Sebrell, to Wingfoot Corp., Wilmington, Del.

Mfr. of sodium sulfate from sodium chloride. No. 1,958,760. O. V. Martin, to Texaco Salt Prod. Co., N. Y.

Cyanamid, cyanic acid, cyan-alid, dicyan-diamid, urea or hydrazine with gasolene-like fuel, as antiknock compound. No. 1,958,744. Roy Cross, Kansas City, Mo.

Gelatinous colloidal precipitated aluminum hydroxide. No. 1,958,710. P. S. Moyer, Lake Forest, Ill.

Solid hydrophyllic lipoid substance with water-soluble dye dispersed. No. 1,958,700. B. R. Harris, Chicago.

Aqueous dispersion of lignin in lignin-sulfonic acid. No. 1,958,624. G. C. Howard & C. Harmon, Wausau, Wis.

Resinous product; glycerol mixed ester of tung oil acids, phthalic anhydride & rosin. No. 1,958,614. Carleton Ellis, to Ellis-Foster Co., Montclair, N. J.

Trade mark "Monsanto," No. 346,248, granted for organic chemicals generally, to Monsanto Chemical Company, St. Louis, May 15, 1934.

Process for calcium arsenate. No. 1,237,815. Suit W. H. Simpson vs. General Chem. Co., dismissed.

U. S. Court of Customs & Patent Appeals: decision against Lilienfeld in alkali-cellulose case No. 3, 201 affirmed.

Treating hydrocarbon sulfuric acid sludge to produce acid-free carbonaceous material. No. 1,958,402. I. Hechenbleikner, to Chem. Construction Corp., Charlotte, N. C.

Polymerized and oxidized linseed oils, miscible with pyroxylin compositions. No. 1,958,372. A Schwarcman, to Spencer Kellogg and Sons, Buffalo.

For making N-chloro azo-dicarbonamidines. No. 1,958,371. F. C. Schmelkes, to Wallace & Tiernan Products, Inc., Belleville, N. J.

Sterilizing agent, solution of an N-chloro derivative of the oxidant in a redox system. No. 1,958,370. F. C. Schmelkes, to Wallace & Tiernan Products, Inc., Belleville, N. J.

Alkali preservation of citrus fruit juices. No. 1,958,232. F. Burkart, Eustis, Fla.

Aryl phosphates and their product. No. 1,958,210. W. Scott, to Kavalco Products, Nitro, W. Va.

Mfr. of ammonium thiocyanate. No. 1,958,209. N. D. Scott, to du Pont & Co., Wilmington, Del.

Stabilizing acid peroxide solution by dissolved tin compound. No. 1,958,204. J. S. Reichert, to du Pont & Co., Wilmington, Del.

Processing calcium chloride. No. 1,958,034. W. R. Collings, to Dow Chem. Co., Midland, Mich.

For making alkali metal hydride. No. 1,958,012. A. M. Muckenfuss, to du Pont & Co., Wilmington, Del.

Production of diphenyl substances. No. 1,957,988. E. Tschunker & W. Klein, to I. G. F., Frankfort, Germany.

Calcium cyanide in molten bath of inorganic salts, as method of case hardening. No. 1,957,973. E. C. Moffett, to Amer. Cyanamid Co., N. Y. City.

For aliphatic carboxylic acids. No. 1,957,939. G. B. Carpenter, to du Pont & Co., Wilmington, Del.

Amino-anthraparaffins & amino-chrysazins as source of amino-dihydroxy-anthraquinones. No. 1,957,936. E. C. Buxbaum & H. R. Lee, to du Pont & Co., Wilmington, Del.

Moisture resistant fibrous material. No. 1,957,912. P. C. Seel, to Eastman Kodak Co., Rochester, N. Y.

Hydrosol of colloidal alumina, silica and formaldehyde in treating sugar juices. No. 1,957,876. P. Wuldart, to S'te Indus. et Agric. de la Somme, Paris.

Water-soluble wood preservative. No. 1,957,873. K. H. Wolman & H. Pflug, to Grubenholzimpragnierung G.m.b.H., Berlin, Germany.

Wood preservative. No. 1,957,872. K. H. Wolman, Berlin, Germany.

Process & apparatus for production of ammonia. No. 1,957,849. D. Pyzel, to Shell Dev. Co., San Fran., Calif.

Mfr. of alumina, nonhygroscopic. Nos. 1,957,766-8. A. Fleischer, Hartford, to Kalunite Co., Philadelphia, Pa.

Catalytic production of hydrocyanic acid. No. 1,957,749. L. Andrussow & K. Huberich, to I. G. F., Frankfort, Germany.

Gaseous mixtures from methane, carrying H and N. No. 1,957,744. G. Wietzel & G. Schiller, to I. G. F., Frankfort, Germany.

Hydrogen and nitrogen mixture from methane. No. 1,957,743. Wietzel, Haller & Hennicke, to I. G. F., Frankfort, Germany.

Aqueous sulfuric acid to produce film in treating sand. No. 1,957,579. J. A. Crew, Zanesville, O.

Defoaming means, method and product. Nos. 1,957,513-4. J. Wolfson, to Nat'l Oil Products Co., Harrison, N. J.

Paper filling of alkaline matter & water insoluble non-waxy organic paste. No. 1,957,474. H. R. Rafton, to Raffold Proc. Corp., Andover, Mass.

Trade mark, "Plexite," liquid or powder adhesive especially for glass. No. 348,934. Rohm & Haas Co., Philadelphia, Pa.

Stable, highly viscous asphalt emulsions. No. 1,957,408. E. Hutzenlaub, to Firma Paul Lechler, Stuttgart, Germany.

Granular trisodium phosphate, deodorant for air in confined spaces. No. 1,957,385. J. S. Brogdon, to Robert Tyer Jones, Jr., Atlanta, Ga.

Organic solvent on coffee beans for caffein-free coffee. No. 1,957,358. E. Scheele, Bremen, Germany.

Sulfonated higher alcohol esters. No. 1,957,324. F. Dambacher, Ger., to E. F. Houghton & Co., Philadelphia.

Carbon black, spherical granules. No. 1,957,314. E. Billings & H. H. Offutt, to Godfrey L. Cabot, Boston.

Process for permanently decolored ammonium sulfate, freeing ammo. thiocyanate & iron. Nos. 1,957,265-7. C. J. Hansen, Essen, Ger., to Koppers Co., Pittsburgh, Pa.

Lead soap-sulfur lubricant. No. 1,957,259. B. Gallsworthy, to Texas Co., N. Y. City.

Removing hydrogen sulfide from gases. No. 1,957,253. C. Eymann, Ger., to Koppers Co., Pittsburgh, Pa.

Production of ammonium chloride & calcium sulfate. No. 1,957,244. T. A. Borradaile, to Alkaline Earths Co., Charleston, W. Va.

Esters from sulfonated phthalic acids. No. 1,957,155. O. Albrecht, to S'te of Chem. Ind., Basel, Sw.

For absorbing N oxide gases mixed with O or air. No. 1,957,130. Est. Friedrich Bartling & A. Meier, to Alterum K.-A. Gess., Berlin, Germany.

Highly active alkali carbon briquettes for preparation of alkali cyanides. No. 1,957,129. Est. Friedrich Bartling, to Alterum K.-A. Gess., Berlin, Germany.

Method & apparatus for condensing sulfur. No. 1,957,006. E. W. Westcott, Niagara Falls, to Sulphide Corp., N. Y. City.

Method & apparatus for recovering halogens from brines. No. 1,956,993. O. V. Martin, to Texaco Salt Prod. Co., N. Y. City.

Secondary butyl lactate. No. 1,956,972. S. L. Bass & H. L. Fenn, to Comm'l Solvents, Terre Haute, Ind.

Calcium carbonate treatment of polyhalite to produce magnesium hydroxide. No. 1,956,930. E. P. Schoch, Austin, Tex.

Glue of seven elements, to adhere to all materials. No. 1,956,899. Armand Levy, Strasbourg, France.

Sulfur dioxide in mfr. of cellulose esters of organic acids. No. 1,956,832. D. B. Mason, to U. S. Ind. Alcohol Co., N. Y.

Metallic ammonia compounds, to prepare catalysts. No. 1,956,585. H. V. Wright, Edgewood, Md.

Preparing m-benzene disulfonic acid. No. 1,956,571. N. B. Grillet, to S'te des Usines Chim. Rhone-Poulenc, Paris.

Resinous product—ethylene glycol derivative of phthalic & lactic acid. No. 1,956,559. T. F. Bradley, to Ellis-Foster Co., Montclair, N. J.

Homogeneous composition of oils & polymerized vinyl compounds. No. 1,956,551. Eibner, Herrmann, Haehnel & Miller, to Consortium fur Elek. Ind., Munich.

Cold resinification of phenol alcohols. No. 1,956,530. F. S. Granger, to Combustion Util. Co., N. Y. City.

Alkali-metal metaphosphate as softener for alkaline-earth water. No. 1,956,515. R. E. Hall, to Hall Labs., Inc., Pittsburgh, Pa.

Solubilizing nonhardened phenol-aldehyde condensation products. No. 1,956,415. Dachlauer, Thomsen & Voss, to I. G. F., Frankfort, Germany.

Chlorine & hypochlorite preservative of sugar syrup or melt. No. 1,956,260. D. V. Wadsworth & L. Wickenden, to J. J. Naugle, Greenwich, Conn.

Sulfurous acid treatment of calcined clay, recovering alumina. No. 1,956,139. R. Staufer & K. Konopicky, to Alterra A. G., Luxembourg.

Anhydrous fused caustic soda from lyes. No. 1,956,138. K. Staib, Baden, to I. G. F., Frankfort, Germany.

Reduction of thiosulfate salts. No. 1,956,113. A. L. Wilson, to Carb. & Carbon Chem. Corp., N. Y. City.

Production of acid disodium pyrophosphate. No. 1,956,111. Baron von Girsewald, H. Weidmann & G. Roesner, to Amer. Lurgi Corp., N. Y. City.

Dehydrogenation products of alcohols. No. 1,955,088. A. J. van Peski & H. F. J. Lorang, to Bataafsche Petr. Maatschappij, The Hague.

Coloring matter containing nitrogen. No. 1,955,030. H. Hopff & R. Schweizer, Ger., to Gen. Anil. W'ks, N. Y. City.

For oxidizing carbonyl. No. 1,955,890. H. L. Riley, to Imp. Chem. Ind's, England.

Uncatalyzed oxidation of acetylene. No. 1,955,885. S. Lehner & G. B. Kistiakowsky, to du Pont & Co., Wilmington, Del.

Acetoethyl alcohol by dehydrogenating butyleneglycol. No. 1,955,882. J. Hilger, Leverkusen, to I. G. F., Frankfort, Germany.

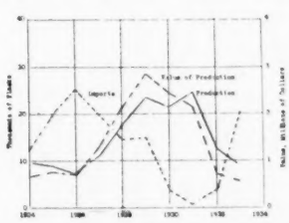
Production of sulfuric esters. No. 1,955,873. R. M. Deanesley, to Shell Dev. Co., San Fran., Calif.

Production of sulfonic acids & sulfonates. No. 1,955,859. R. T. Osborn & R. Craig, to Stan. Oil Co. of Cal., San Francisco, Calif.

Manufacture of aromatic arylides. No. 1,955,802. R. F. Goldstein, to Imp. Chem. Ind's, England.

Fine Chemicals

Figures covering '33 mercury output indicate that 9,402 flasks, with a calculated value of $556,852, were produced. These figures represent decreases of 26% in quantity and 24% in value, from 12,622 flasks, with a calculated value of $731,129, produced in '32. Monthly average price was $48.50 a flask in January, rose steadily to $66.50 in October, highest average for the year, then fluctuated slightly and closed the year at $66.33 a flask. Average price for the year was $59.227 a flask, compared with $57.927 a flask in '32.



Trends in production, imports and value of production, '24-"33

As usual, California's output, 3,663 flasks from 21 mines, was the largest report for any State. The '32 production of 5,172 flasks for that State was made by 63 mines. A total of 1,342 flasks was produced by 5 properties in Oregon in '33, compared with 2,523 flasks from 7 properties, in the preceding year. Nevada's production of 387 flasks from 12 mines in '33 was a reduction from 474 flasks from 15 mines in '32. Outputs in Texas, Arkansas, Washington, and Utah, are combined for statistical presentation, and production of this group of States amounted to 4,010 flasks in '33. No production was reported for Arizona and Alaska in '33, while Utah joined producing States for 1st time since '07. Mercury production of Utah in '33 was from the old Sacramento mine, in Mercur mining district, which produced mercury in '07 as a by-product of gold operating.

Principal mercury-producing properties in '33 were: Parnell Hill mine, Pike Co., Ark.; Sulphur Bank, Great Western and Mirabel mines, Lake Co., Oat Hill, and Aetna mines, Napa Co., Aurora and New Idria mines, San Benito Co., Carson Mine, San Luis Obispo Co., Red Rock mine, Santa Barbara Co., Cloverdale mine, Sonoma Co., and Altoona mine, Trinity Co., Calif.; Castle Peak mine, Storey Co., Nev.; Black Butte mine, Lane Co., and Bretz mine, Malheur Co., Ore.; Big Bend, Chisos, Rainbow, and Tarrant mines, Brewster Co., Tex.; and Consolidated Mercury mine, Lewis Co., Wash. Imports (general) of mercury

in '33 were 22,555 flasks, compared with 8,114 flasks in '32 and 356 flasks in '31. Of the total imports in '33, 17,007 flasks were credited to Spain, 3,212 flasks to Italy, and remainder to Mexico and U. K. Imports for consumption were 20,315 flasks. Stocks of mercury in bonded warehouse increased from 3,840 flasks at the end of '32, to 5,370 flasks at the end of '33. Exports of mercury were not separately classified in '33. In '32 there were 214 flasks, compared with 4,984 flasks in '31. Bureau of Mines.

Production of Benzyl Cellulose

Pure benzyl cellulose is prepared by a German process from the crude product of manufacture by conversion into a foamy mass by incorporating an emulsifying agent, such as a potash soap, or sodium oleate, and extracting with organic solvents, such as methanol, etc.

Patents—Fine Chemicals

Alkylation of acid nitriles. No. 1,958,653. Karl Ziegler, to Schering-Kahlbaum, Berlin, Germany.

Calcium hydroxyethylphenylamino para sulfonate. No. 1,958,218. C. J. Treston, to Kloister Labs. Corp., Ephrata, Pa.

Process for preparing 2-methyl-selenazoline. F. L. White, to Eastman Kodak Co., Rochester, N. Y.

Selenazolinocarbocyanine dye. No. 1,957,869. F. L. White, to Eastman Kodak Co., Rochester, N. Y.

Lactobacilli concentrate. No. 1,957,555. J. Reichel & H. A. Cheplin, to Sharp & Dohme, Philadelphia, Pa.

Acetyl-choline salts and dimethyl-amino-ethyl acetate. No. 1,957,461. L. W. Jones & R. T. Major, to Merck & Co., Rahway, N. J.

Certain acylchlorine esters and their salts. No. 1,957,443. J. K. Cline, to Merck & Co., Rahway, N. J.

Trade mark, "Milma," preparation of magnesia as an antacid. No. 348,190. Chas. H. Phillips Chem. Co., N. Y.

Hydroxy-phenyl-amino-propanols. No. 1,957,092. M. Bockmuhl & L. Stein, to Winthrop Chem. Co., N. Y. City.

For laevo-1-phenyl-2-methylaminopropynol. No. 1,956,950. G. Hildebrandt & W. Klavehn, to E. Bilhuber, Jersey City, N. J.

Salts of dialkylaminoarylfosfinous acids. No. 1,956,889. L. Benda, to Winthrop Chem. Co., N. Y. City.

Production of beta lactose. No. 1,956,811. P. F. Sharp, to Cornell Univ., Ithaca, N. Y.

New Equipment

Large paint manufacturer is marketing a metal protective coating which when applied over rusty surfaces is said to definitely check further erosion, creating over rusty surfaces a film which prevents disintegration. Coating is reported to withstand successfully exposure to sulfuric, hydrochloric, ammonium hydroxide, alkalies, hydrogen sulfide and salt water. Its effectiveness is explained by the impermeability of the film because of the absence of microscopic pores. **QC 131**

Following claims are made for a new bottle filler with a multiple spout unit: 1. All overflow containers, traps, bottles, valves, floats, etc., are eliminated. The small amount of excess liquid is delivered back to original supply tank. 2. A constant vacuum (of any degree) is maintained at all times with resulting faster and more even filling. 3. Positive "No Drip" automatically sealed filling spouts. 4. Filling spouts individually compensated to insure even filling uneven bottles. 5. Simple adjustment for feeding and filling different size or shape bottles. 6. Perfect control of feed in and out of bottles with but a finger. 7. No counterweights or balance on synchronized filling head. Double action foot control. 8. Direct driven, slow speed, pump to stand long wear and tear. **QC 132**

A control valve has been perfected which not only controls liquid passing through but measures amounts and will automatically deliver a definite quantity. **QC 133**

A self contained portable color-matching device, known as "Telecolor," has been developed. Instrument uses photo electric cells to distinguish differences between any 2 specimens, indicating which of the 2 is the lighter in shade, when placed in respective compartments and resultant difference read on a calibrated dial in percentage difference. It is then possible to place each specimen in the device separately and with the aid of 6 color filters, read the values of each of the primary and secondary colors composing the total color. To make it portable, size has been confined to approximately 14 x 14 x 7 inches and the weight to 15 lbs. It operates from any electric light socket. **QC 134**

A new type of manometer fitted with automatic electric control features is now being manufactured. New instrument is stated to be unusually rugged and simple and to remain permanently accurate under severest service conditions. It is said to be adaptable to a wide variety of direct and differential control uses for pumps, liquid levels in tanks and sprinkler systems, and for maintaining gas pressure and flow between close limits; or for starting and stopping the flow in 2 pipes alternately for special purposes. Other uses suggested are the automatic starting of a reserve pump in case of a failure of the regular unit to operate, production of alternate pressure and vacuum in a closed vessel, or for electrically operated remote control of steam valves, etc. It has the additional advantage of providing a visible reading of performance at all times. **QC 135**

Accurate laboratory predetermination of the effects obtainable with new ceramic colors, and all similar experiments, can now be handled at any time, through a product just introduced—the "Electrikiln." It makes the experimenter independent of plant production schedules in running tests, permits development work to continue even when the plant is down. It may be plugged into any light socket, and is said to take less power and cost less to operate than the ordinary electric household iron. Weighing 27 lbs. it is easily portable. Temperatures of from 1950 to 2000° are obtained. **QC 136**

To meet demand for an inexpensive means for remote operation of various small stations, "Polaricode, Junior," a low cost, small size supervisory control particularly suitable for industrial plants, has been introduced. New unit includes a raise-lower control combined with simultaneous telemetering indication of position for distant control of variable position apparatus such as valves, rheostats, tap changers, and similar equipment. "Polaricode, Jr." is designed and priced for application to small transformer switching, distribution and tie-point substation; various single unit automatic railway, mining and hydro stations; electrified pumping stations; industrial plant substations; and similar applications. It operates a maximum of 5 apparatus units—a size small enough to permit low cost, yet sufficient for the average small application. Only 2 telephone-type line wires are required between the dispatching point and the remotely controlled station. System performs all of the various functions of apparatus control, gives continuous and individual signal lamp supervision, telemetering and synchronizing. **QC 137**

As many as 4 potentiometer circuits may be included in a new potentiometer pyrometer developed. This recently introduced recording instrument has been named "Galvatron" and because of its particular type of construction, it is immediately suited to a wide variety of uses in chemical and allied processes. Outstanding feature is its continuous records, from one to 4 in number, which are on a circular recording chart. When more than one record is required, each is made in a different color of ink so that every line is easily distinguishable from the others on the chart, regardless of how many times the records may cross each other. **QC 138**

Ever widening uses for corrosion resistant alloys in the process industries is indicated by the recent installation of a 20,000 lb. capacity C.P. bleach tank in the plant of one of the large midwestern soap manufacturers. Tank, used in

the refining of glycerin, is 6 ft. in diameter by 13 ft. long with a water-jacketed conical bottom. One-quarter inch clad steel was used for the shell and bottom and 3/16 inch clad material formed the water jacket. All welds were ground throughout. Jacket was tested to 50 lb. hydrostatic pressure.

This is but one of several similar installations within the soap industry that have recently specified stainless clad steel to meet their conditions of corrosion resistance. Initial economy of the material, it is reported, has been a further factor in the selection of stainless steel for various uses within the industry which have included pressure vessels, centrifugal separators, and tanks. **QC 139**

A new cabinet or unit weight type platform scale comes equipped with from 1 to 4 unit weights, depending on the specifications, and is so arranged that by pressing down on the 1st handle a unit weight equal to the capacity of the dial is added to the weighing system. By pressing down the 2nd handle a 2nd weight equal to the dial capacity is added and so on, or if one wants to add the whole 4 unit weights at one time this can be done by simply pressing down the 4th handle. Weight thus added is shown in a small window on the dial face. Scale is used where larger loads are to be weighed by small increments and where it would be impractical to graduate the dial to the small graduations necessary. **QC 140**

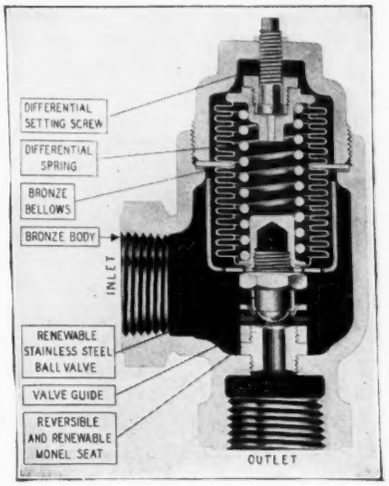
Used absolutely bare, this new antimony electrode (pH control) which never requires platinizing is designed for severe industrial service. No sampling is needed, for it dips directly into the solution. Mounting the cell is so simple a matter that in almost every application it may be tried out in a number of places to determine the optimum location where pH is most directly related to the process or product control involved. It can be used in solutions containing relatively large amounts of suspended matter. Solution temperature variations are automatically compensated for. Immersion should remain complete, of course; but in connection with processes where liquid level must vary, suitable float-supports may be rigged up. **QC 141**

A new meter body for electric flow meters is designed for measuring flow of any liquid, vapor or gas creating a differential pressure across an orifice of 1.6 to 16 inches of mercury. Outstanding features are ease of cleaning and range changing, combined with ruggedness and simplicity.

A seamless steel "U" tube with union compression fittings connects the high and low pressure chambers. A mercury drain mounted on this tube has a hardened needle point screw which seals the mercury drain hole to the "U" tube. Mercury cannot be blown out of this meter body under severe overload or reverse flow conditions. Two highly resilient seals of an oil resisting material seat firmly in the high pressure chamber, one seal on top the float, one underneath.

As the mercury level rises and falls with flow changes, the float in the high pressure chamber is free to move and accurately follows the mercury level. There are no pressure bearings to leak; no gears, links or chains to wear or break; and no electric contacts to foul in mercury. No welding or welded parts used on this meter body. Forged steel pressure chambers, heavy seamless steel tubing for the range tube—"U" tube—and piping, with all copper gasketed fittings recessed, eliminates welding. Four size ¾" specially heat treated nuts and bolts (ultimate strength over 100,000 lbs.) join cover to high pressure chamber. Rugged construction permits working pressures to 2500 lbs. per sq. inch. Each Meter Body tested to 5000 lbs. per sq. inch before leaving factory. Range of this meter body can be changed quickly, easily and cheaply without shutting down the line. Nine interchangeable range tubes with corresponding charts for the recording meter are available. **QC 142**

A new and greatly improved thermostatic steam trap for industrial use, has been introduced. These traps are now offered in ½, ¾ and 1 inch sizes with greater capacity and far greater steam economy. By virtue of unique principles applied to design and construction, they will, it is reported, do the work of larger and more costly traps. Exclusive differential setting feature assures actual saving of steam. An adjusting screw located at the top of the trap may be set to discharge condensate at a temperature corresponding to as much as 20 lbs. less than the operating steam pressure, whether it is 50, 75 or 125 lbs., without any further adjustment. Other outstanding advantages are the renewable and reversible double life Monel seat, and a renewable stainless steel ball valve, the ball of which is true to within 0.00005 of an inch. As a further protection the renewable valve guide holds the ball valve central to the seat and thus insures tight closing. **QC 143**



Use of mercury switches to eliminate open make-and-break contacts controlled by the pointer, is a revolutionary feature of a new automatic control indicating thermometer. In this new controller, every 6 seconds a motor-driven control table determines location of the pointer in reference to the control setting, and tilts the mercury switch from one side to the other if the temperature has changed. With this unique system, measuring mechanism is free to position itself, unhampered by the control mechanism. There is no excess weight on the pointer, no distortion or restriction of pointer movement. The making of control contacts is not dependent upon friction, because the switch is positioned with a positive action by the electric motor. Contacts are unaffected by vibration because the mercury switch is mechanically locked in place until a different position is required. Corrosion and dirty contacts are eliminated as the switch is sealed in glass. These mercury switches have capacities up to 15 amperes at 110 volts (10 amperes at 220 volts), thus eliminating external relays in most applications. This control mechanism is adaptable to one-, two-, or three contact control (or signalling) systems. **QC 144**

Chemical Industries,
25 Spruce Street,
New York City.

I would like to receive more detailed information on the following: (Kindly check those desired).

QC 131	QC 136	QC 141
" 132	" 137	" 142
" 133	" 138	" 143
" 134	" 139	" 144
" 135	" 140	

Name .....
Title .....
Address .....

Equip. June

Coal Tar Chemicals

Nickel or the chromium-nickel steels of the 18-8 type should be satisfactory for use in handing and condensing vapors of phenol or the cresols. Lead is rapidly attacked by tar acids, and should not be used in handling these materials. Use of copper in phenol stills and containers for phenols at ordinary temperatures should be avoided, both because the copper itself is attacked to a considerable extent and also because the products of the action of the tar acids on copper cause discoloration of the phenol or cresol. "Corrosion of Metals By Phenols," by F. H. Rhodes, P. A. Riedel, and V. K. Hendricks, *Industrial & Engineering Chemistry,* May, p. 533.

Benzol Purification

Selective elimination of the diolefines in motor benzol can be effected by silica gel in conjunction with sulfuric. Silica gel alone does not suffice. Best purification method is to treat benzol while hot under pressure in the liquid phase; an autoclave with agitator is necessary. Benzol previously acidified with sulfuric is placed in the autoclave and silica gel introduced. Temperature is raised and when a certain pressure is reached the agitator is started. Excellent results are reported with a temperature of 160° C., a pressure of 8 atmospheres, and an agitating period of one hour. G. V. Kopelvitch, A. I. Brodovitch, Koks i Khimia, '33, p. 34-39.

Patents—Coal Tar

Organic solvent purification of quinone. No. 1,957,484. A. Zimmerli & R. C. Lyon, to du Pont & Co., Wilmington, Del.

Anthraquinone dyes. No. 1,957,459. E. T. Howell, to du Pont & Co., Wilmington, Del.

For preparing nitro-beta-hydroxy pyridines. No. 1,957,089. O. Wulff, to I. G. F., Frankfort, Germany.

Yellow anthraquinone derivatives, giving a green vat. No. 1,957,084. B. Stein, Ger., to Gen. Anil. W'ks, N. Y. City.

Monocarboxylic acids and derivatives. No. 1,956,718. A. O. Jaeger, to The Selden Co., Pittsburgh, Pa.

Resorcinol body from by-product mercapto. No. 1,956,570. C. H. Gallay, to S'te des Usines Chim. Rhone-Poulenc, Paris.

For maleic anhydride and acid. No. 1,956,482. F. Zumstein, to Boehringer & Sohn, Germany.

Sulfurating mixture, bases of pyridine & quinoline. No. 1,956,248. D. W. Parkes & C. D. Mitchell, England.

Colorless crystalline hydrogenation products from dinaphthol. No. 1,955,998. K. Zahn & H. Koch, to Gen. Anil. W'ks, N. Y. City.

Acylamino sulfochlorides of the benzene series. No. 1,955,887. W. Neelmeier & W. Lamberz, to Gen. Anil. W'ks, N. Y. City.

Yellow to orange azo dyestuffs. No. 1,958,758. H. Krzikalla & A. Kirsch, to Gen. Anil. W'ks, N. Y. City.

Polyazo dyestuff, for water-insoluble colored products, fast to light, water & weather. No. 1,958,327. (Appl. 1928.) R. Winkler, to S'te Chem. Ind., Basel, Switzerland.

Preparation of amino-4-hydroxy-anthraquinone. No. 1,957,920. M. S. Whelen, to du Pont & Co., Wilmington, Del.

Vat dyestuffs of the dibenzopyrenequinone series. No. 1,957,892. Kunz, Kranzlein, Koeberle, Corell, Berthold and Vollmann, to Gen. Anil. W'ks, N. Y. City, 1st appl., Germany, '28.

Anthraquinone dyestuffs. No. 1,957,858. B. Stein, to Gen. Anil. W'ks, N. Y. City.

Bluegreen anthraquinone dyes. No. 1,957,599. G. Kalischer & E Honold, Ger., to Gen. Anil. W'ks, N. Y. City.

Equipment Booklets

E148. Aluminum Co. of America, Pittsburgh. Aluminum News-Letter for April contains an unusual number of new and novel uses for aluminum.

E149. American Instrument Co., Washington, D. C. Bull. 1521 describes a new laboratory heater and rheostat designed for distillation, extraction, evaporation and a host of other laboratory uses.

E150. American Lava Corp., Chattanooga. A new catalog describes and illustrates "Lava" and "Alsimag"-made-to-order ceramic parts for various industries.

E151. Bailey Meter Co., 1050 Ivanhoe Road, Cleveland. Engineers and executives responsible for the economical generation of steam will be vitally interested in the new 32-page bulletin "Savings Effected by Bailey Boiler Meters." Bulletin includes actual operating data showing the nature and amount of savings effected in over 20 typical installations of Bailey Boiler Meters which cover a wide range of fuels, methods of firing, types and sizes of boilers. It contains handy indexes of the type, size, method of firing of boilers and methods by which savings are effected. Under each subject is listed the page numbers of which examples may be found. A tabulation of plant data listing major equipment, and a summary of savings showing investment, depreciation, interest, maintenance, net annual saving and net annual return on the investment are included for each of the various samples cited.

E152. The Brown Instrument Co., Philadelphia. Catalog No. 6702 describes new Brown indicating thermometer and pressure gauge controller. Several new and revolutionary departures are incorporated in this new design.

E153. The Brown Instrument Co. Folder 85-10 illustrates the importance of automatic temperature control.

E154. Buffalo Pumps, Inc., Buffalo, N. Y. New folder reports on a line of chemical pumps.

E155. The Deming Co., Salem, Ohio. A new catalog-styled "new from start to finish" has been issued, 160 pages, illustrated, showing Deming pumps, water systems and auxiliary parts and equipment.

E156. General Electric Co., Schenectady, N. Y. GEA-1607A describes direct-current generators and exciters of 1 to 5 Kw., Type B.

E157. H-B Instrument Co., 2518 N. Broad st., Philadelphia. Blue Book, Part I is a catalog showing a complete line of thermometers specially adapted to the chemical industry. Contains a wealth of statistical data and should prove invaluable to plant managers, operating executives, etc.

E158. The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio. The Hydraulic Press reports briefly with the aid of photographs on new and interesting hydraulic press jobs.

E159. Illinois Testing Laboratories, 141 W. Austin st., Chicago. Bulletin 1726 illustrates and describes the "Alnor Pyroll" pyrometer for measuring surface temperatures of revolving rolls or driers.

E160. Illinois Testing Laboratories. Bulletin 1727 covers the "Alnor" Pyrocon combination pyrometer and type 1755 pyrometer for measuring surface temperatures of flat surfaces such as molds, dies, platens, plates and other similar surfaces either metallic or non-metallic.

E161. The Northern Blower Co., W. 65th st. and Barberton ave., Cleveland. A series of monthly folders dealing with "dust-hazards" and their prevention in various industries is being issued by this company. Data will be dealt with in a strictly unbiased manner. It is planned to make the complete series of valuable record which will assist executives in eliminating the dangers of occupational sickness among employes, of fire and explosion, etc.

E162. The Parker Appliance Co., Cleveland, Ohio. Bulletin No. 35 gives complete data on Parker tube couplings and associated equipment.

E163. Pulmosan Safety Equipment Co., 176 Johnson st., Brooklyn. A 4-page leaflet describes and illustrates the improved Pulmosan dust respirators, "M" series.

E164. Raymond Bros. Impact Pulverizer Co., 1302 N. Branch st., Chicago. "Raymond Kiln Mill Operations" is a new booklet detailing the Raymond drying and pulverizing system-drying and grinding in one operation.

E165. Republic Steel Corp., Youngstown, Ohio. This 16-page brochure contains up-to-the-minute data on "Enduro" 18-8 stainless steel as well as several of the more important variations which make up the "Enduro" 18-8-S, 18-8-STi, 18-8-SMO and 18-8-FM. Authentic metallurgical and fabrication data is given. An important feature of the booklet is a table of laboratory corrosion data listing the degree of corrosion-resistance of "Enduro" 18-8 stainless steel, "Enduro" AA and "Enduro" S to each of more than 300 chemical reagents, solutions and products under varying conditions of temperature and concentration.

E166. Republic Steel Corp. A new folder explains the metallurgical reasons for the superior adherence of the zinc coating on Republic Galvannealed sheets and details a number of the desirable characteristics of these sheets.

E167. C. J. Tagliabue Mfg. Co., Park & Nostrand aves., Brooklyn. A 4-page circular describes the new "Tag" thermostatic steam traps with a unique differential setting feature, renewable stainless steel ball valve and reversible and renewable double life seat.

E168. Worthington Pump & Machinery Corp., Harrison, N. J. W-311-B1 is a 4-page leaflet describing Worthington centrifugal pumps, single stage volute, type R.

E169. Worthington Pump & Machinery Corp. D-475-B9 is a 2-page circular on internal bearing double helical rotary pumps.

E170. Worthington Pump & Machinery Corp. L-612-S28 leaflet deals with Worthington Refrigeration compressors of the horizontal duplex type.

E171. Worthington Pump & Machinery Corp. W-200-B2 is descriptive of Worthington surface condensers, patented folded tube layer type, welded steel sheet design.

Container and Packaging Bulletins

E172. Hinde & Dauch Paper Co., Sandusky, Ohio. A most valuable booklet is "Permissible Packages for Special Commodities" which contains lists of exceptions to standard regulations governing the use of corrugated fibre shipping boxes in freight, express and parcel post service.

E173. Hinde & Dauch Paper Co. ."Corrugated Boxes and How to Use Them" is a reference book for use in the selection and packing of corrugated fibre shipping boxes brought right up-to-date.

E174. Meurer Steel Barrel Co., Newark, N. J. A 4-page circular affords complete specifications of the "Anchor" steel barrels and "Columbia" shippers.

E175. National Collapsible Tube Co., Providence, R. I. A new folder describes the complete line of National collapsible tubes, complete with necessary data.

E176. Shipping Container Corp., Washington, D. C. Those responsible for packaging of chemicals and related products will be most interested in this booklet describing a steel collapsible container with many novel advantages.

Chemical Industries,
25 Spruce Street,
New York City.

I would like to receive the following booklets specify by number. .....

.....

Name .....
Title .....
Company .....
Address .....

Equip.-Container-June

Plant Operation

Carbon bisulfide storage buildings should be constructed of fire-resisting materials. It is customary to store in a tank under water or covered by inert gas (carbon dioxide or nitrogen). When filling the tank the carbon bisulfide is forced into the plant by pumping into a storage tank either inert gas or water.

To avoid leakage from the system if a pipe becomes blocked up while the liquid is being pumped, a return valve is arranged in the pump system, which opens when there is excessive pressure and allows water to return to the inlet side. Pipes carrying the liquid must be carefully connected so as to avoid leakage. In some cases flanged wrought iron tubes are provided with graphite packing between the flanges. Where the pipes are carried underground it is sometimes difficult to detect a leak, and in one works a slight explosion resulted from the leaking vapor becoming ignited at a boiler fire. Some firms recommend the avoidance of brass fittings in such plant, as they state that copper sulfide formed by the action of the carbon bisulfide, may on oxidation become hot and cause ignition.

A storage tank should be well separated from the plant and process rooms of the works. It is undesirable that men should be allowed under any conditions to enter tanks which have contained carbon bisulfide until the tanks have been thoroughly cleaned by repeated charges of hot caustic-soda solution followed by several hot water washes, and finally allowed to stand open for 3 days so as to make sure that any traces of vapor are removed. Unless a responsible person is prepared to certify that a tank is completely free from vapor, no person should be allowed to enter unless he is wearing an efficient breathing apparatus and rescue belt, the rope of the latter being held by another person directly outside the tank. Where it is necessary to scrape sludge from the bottom of such a tank, the use of an aluminum scraper is advised, and spanners made of this metal are also recommended for use on such plant, in order to avoid risk of striking sparks. British Home Office Memorandum (Form 836, March '34).

Acetone—Soluble Cellulose Acetate

A foreign patented process permits conversion of cellulose triacetate into acetone-soluble cellulose acetate by treatment with perchloric acid or a perchlorate in the presence of acetic.

Equipment Co. News

Pfaudler (glass-lined equipment) has opened a British factory....Paterson Foundry & Machine has appointed William Scherr, manager, New England, with headquarters at Boston. He was formerly with Inland Lime & Stone, Ford, and E. B. Badger & Sons Co....Acheson Oildag has changed to Acheson Colloids Corp....B. J. Cross and William Lloyd, both of whom were formerly with Combustion Engineering Corp., are now with that company's successor, Combustion Engineering Co....Harnischfeger Corp., Milwaukee, will show a "masked marvel" at the Chicago fair—showing and explaining many uses of welding. This company is celebrating its 50th anniversary....Diamond Chain & Manufacturing, Indianapolis, for several years has only made roller chains of stainless steel on special order. To serve market better company has gone into the manufacture of the most commonly used sizes and has ample stocks on hand....Factory office of U. S. Stoneware, which has been in Akron for 69 years, has been moved to Tallmadge (Akron suburb) where a 2-story administration building has just been completed . . . SKF Industries, Inc., has consolidated executive offices with the Philadelphia plant....Patterson Foundry & Machine held its annual sales convention at East Liverpool, Ohio, May 16 to 19th.... Railey & Milam, 27 W. Flagler st., Miami, is a distributer of "Enduro" stainless steel and toncan iron (Republic Steel).

Dorr-Oliver Is Dissolved

After affiliation for 3 years, it has been agreed to dissolve Dorr-Oliver Corp., and The Dorr Co., and Oliver United Filters, Inc., thereafter will operate independently of each other. Oliver United will, however, undertake further adaptation and marketing of the Dorrco Filter in the U. S. and in certain other countries; and Oliver United products, including filters, will be handed in European territories by Dorr foreign representatives.

Both Dorr and Oliver United will continue to be represented in South Africa by E. L. Bateman, Pty. Ltd., Johannesburg; in Australia by Crossle & Duff, Pty., Ltd., Melbourne; and in Japan by Andrews & George Co., Inc., Tokyo, acting independently for each company.

Separation of the two companies has been brought about on an entirely friendly basis, and the many personal friendships which have been formed among members of the 2 organizations during the past 3 years will be continued.

Gov. Publications

A digest of federal government publications and other booklets from various sources of interest of the chemical and process industries.

Information for code authorities, suggestions for bylaws of code authorities. 11 pages. Covers membership, organization of Industrial Adjustment Agencies, inter-industry relation, expenses of code administration, information and statistics, code authority regulations, powers and liabilities of code authorities, etc. 5c*.

Federal specifications for copper-silicon-alloy castings (Federal Specifications Board, Federal Specification QQ-C-593). 5c*.

Federal specifications on kerosene, specification VV-K-211. 5c*.

Mercurial poisoning. Experimental studies on acute mercurial poisoning, 21 pages. Public Health Service Reprint 1605. 5c*.

Mineral Resources of the U. S., Part 2, Nonmetals, '33. 675 pages. Gives statistics on fluorspar and cryolite, potash, carbon black, salt, bromine, calcium chloride, fuel briquettes, fuller's earth, talc, soapstone, sulfur, pyrites, silica, feldspar, gypsum, etc. Cloth, $1.00*.

Critical test for the purity of gases (Bureau of Standards. Research Paper 643). Paper reports a method by which the purity of gases (and liquids having normal boiling below room temperatures) may be critically tested. 5c*.

Comparison of tariff acts—a comparison by paragraphs of the dutiable schedules on the free list of the Tariff Act of 1930 with the corresponding provisions of the Tariff Act of 1922. 263 pages. 20c*.

Codes of fair competition:—reclaimed rubber manufacturing industry Code No. 377 Registry No. 1632-24. 5c*.

Tanning extract industry Code No. 372. Registry No. 1658-1-01. 5c.

Crude petroleum and petroleum products, 1934. Pages 299-372 (Statistical Appendix to Minerals Yearbook, 1932-'33). Gives summary tables of crude petroleum, refined products, and natural gasoline, domestic production of crude petroleum, world production, consumption, distribution, stocks, prices, values, wells, etc. 10c*.

Iron and steel industry in 1933—advance summary, Bureau of Mines, Mineral Statistics division, Washington.

Advance summary of report on gasoline prices by the Federal Trade Commission to the U. S. Senate in response to Senate Res. No. 166. Federal Trade Commission, Washington.

Asbestos Industry in 1933—advance final summary, Bureau of Mines, Mineral Statistics Division, Washington.

Abrasive Materials Industry in 1933—advance summary, Mineral Markets Reports, No. M. M. S. 283. U. S. Bureau of Mines, Washington.

The flotation of Alabama graphite ores. R. I. 3225, Report of Investigations. U. S. Bureau of Mines, Washington.

Note: Where a price is given for Federal Government publications requests should be sent to the Supt. of Documents, Washington. Remittances should be made by postal money order, express order, coupons or check. Postage stamps, foreign money, are not accepted. Currency may be sent at sender's risk.

Miscellaneous Publications

Oregon Spray Recommendations for pests and diseases of stone fruits and nuts. Extension Bull. 470, Oregon State Agricultural College, Corvallis, Ore.

Tar oil distillates as dormant spray materials for fruit trees. Bull. 293. Virginia Agricultural Experiment Station, Blacksburg, Va.

The effect of time and rate of application of nitrate of soda on the yield of cotton. Bull. No. 490, Texas Agricultural Experiment Station, College Station. Brazos County, Tex.

Bulletin of the Institution of Mining & Metallurgy (British, Cleveland House, 225, City Road, London, E. C. 1) contains a discussion of the geology of the Rio Tinto Mines.

American Bottlers of Carbonated Beverages (726-729 Bond Bldg., Washington) has issued Educational Bulletin No. 7, "Suggestions on Elimination of Spoilage in the Carbonated Beverage Industry." Question of container cleanliness is thoroughly gone into.

A. S. T. M. 1934 preprint 70, "Report of Committee D-17 on Naval Stores" (testing and grading naval stores). American Society for Testing Materials. 260 S. Broad st., Philadelphia.

A. S. T. M. preprint 71, "Report of Committee D-19 on Water for Industrial Uses."

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Alpha Naphthylamine
Amino Naphthol Sulphonic Acid (1:2:4)
Amino Azo Benzene Hydrochloride
Amino Azo Toluene Base
Amino G Salt
Amino H Acid
Amino J Acid
Amino Phenol Sulphonic Acid (1:2:5)
Aniline Oil
Anthraquinone
Anthrarufin

Benzanthrone
Benzidine Base-Distilled
Benzoyl Benzoic Acid (Ortho)
Beta Amino Anthraquinone
Beta Naphthol
Beta Naphthylamine
Broenners Acid

Calcium Malate (Normal)
Cassella Acid
Chicago Acid (SS Acid)
Chlor Benzanthrone
Chlor Quinizarine
Chromotropic Acid
Cleves Acid (1:6–1:7 & Mixed)
Cumidine

Dianisidine
Diethyl Aniline
Dimethyl Aniline
Dinitrobenzene
Dinitrochlorobenzene
Dinitrotoluene (M. P. 66°—55° 20°)
Dinitrotoluene Oily
Dinitrophenol
Dinitrostilbene Disulphonic Acid
Di-Ortho-Tolyl Thiourea
Diphenyl Methane
Ditolyl Methane

Epsilon Acid
Ethyl Benzyl Aniline
Ethyl Benzyl Aniline Sulphonic Acid

Fumaric Acid

G-Salt
Gamma Acid

H-Acid
Hydroquinone

Isatin

J-Acid

Koch Acid

L-Acid
Laurents Acid

Malic Acid
Maleic (Toxilic) Acid
Maleic (Toxilic) Anhydride
Metanilic Acid
Meta Nitro Para Toluidine
Meta Phenylene Diamine & Sulpho Acid
Meta Toluylene Diamine & Sulpho Acid
Mixed Toluidine
Myrbane Oil

Neville-Winthers Acid
Nitro Amino Phenol (4:2:1)
Nitro Benzene
Nitroso Phenol (Para)

Ortho Anisidine
Ortho Chlor Benzaldehyde
Ortho Chlor Benzoic Acid
Ortho Chlor Toluene
Ortho Nitro Anisole
Ortho Nitro Toluene
Ortho Toluidine

Para Amino Phenol
Para Amino Acetanilide
Para Nitroaniline
Para Nitrotoluene
Para Nitroso Dimethylaniline
Para Toluidine
Peri Acid
Phenyl J-Acid
Phenyl Peri Acid
Phthalic Anhydride

Quinizarine

R-Salt

S-Acid
SS-Acid (Chicago Acid)
Schaeffer Salt
Schoellkopf Acid
Sodium Hydrosulfite
Sodium Metanilate
Sodium Naphthionate
Sodium Sulphanilate
Succinic Acid
Succinic Anhydride
Sulphanilic Acid

Tetra Chlor Phthalic Anhydride
Thiocarbanilide
Tolidine
Tolazine
Tolyl Peri Acid
Triphenylguanidine

Xylidine

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NATIONAL N QUALITY

Chemical Markets & News

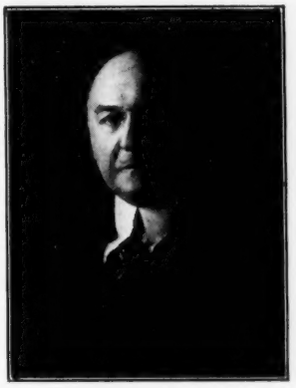
National Labor Board Hands Down Decision in National Aniline Case—Pierre S. du Pont Writes Dissenting Opinion

National Labor Board handed down a decision on May 26, in the complaint of the Allied Chemical Workers' Union No. 18,705 against National Aniline. (CHEMICAL INDUSTRIES, May, '34, p. 435). Case came to the National Board from the Buffalo Regional Board on the ground that their ruling had been disregarded by the company. Principal point of dispute has been the refusal of the company to enter into a written agreement. At no time has there been any disagreement over wages, hours, or conditions. Chemical industry has watched developments closely for a number of basic principles are involved.

Majority report (signed by Senator Robert F. Wagner, as chairman) charges: "The evidence is clear that, even if these proper persons had presented or might present acceptable demands, the company would not record nor engage itself with them to observe, the employment code that they might jointly agree upon. If this is not a denial by the company of its employees' right to bargain collectively, the promise of Section 7 (a) is tinsel. Congress did not write vain words, and we must not empty the right to 'bargain collectively' of serious meaning."

The decision reviews in detail the history of the case. It then goes on to state: "The company maintains that it is respecting the rights of employes to bargain collectively because it receives representatives of the union and discusses working conditions and grievances with them. But the right of collective bargaining means more than this. As we said recently in the Hall Baking Co. case, 'The objective sought by the law is the making of collective agreements.' To be sure, the substance of these agreements is wholly a matter of negotiation, and is not prescribed in any respect. But an attitude of unwillingness to enter into any obligation with respect to future relations thwarts the statute, and this is the attitude of the National Aniline & Chemical Co., not only last fall but very definitely in May."

In closing, the Board directs that "the Company resume at once negotiations with the committee designated by the union, and that both parties make an earnest effort to conclude a bilateral contract concerning conditions of employment in the plant. Concurrently with the beginning of these negotiations, the strike is to be called off and the company is to reinstate all the strikers as rapidly as it has need for workmen. In so doing the company should respect seniority of service and must not exclude any man for his leadership or activity in the union or in the strike (unless violence or other improper conduct is proved against him to the satisfaction of the Buffalo Regional Labor Board). If all the employes of Mar. 17 are not reinstated at once, the company, within 10 days, should prepare and send to the Regional Labor Board a list of the employes in order of seniority still waiting employment, and, as it has need of workmen, should draw in order from the list so long as there are men on it desiring to return to work."



Pierre S. du Pont—"The law does not require written contract between employer and employee"

In a minority opinion Pierre S. du Pont points out that "the union especially desired a collective agreement to the effect that the union was the employes' collective bargaining agency notwithstanding the fact that not all of the employes of the company were members of the union and would, by recognition of the union as the bargaining agency, be deprived of choice of representatives and all rights of representation." Mr. du Pont further pointed out that the law does not require written contract between employer and employee and that the conferences held in November of '33 between E. C. Osborn, Buffalo plant manager for National Aniline, and representatives of the union resulted in terms tenatively agreed upon, many of which were embodied in the plant notice posted Nov. 25th and that there was no evidence to show that any of these terms had been violated by the company nor that the possibilities of collective bargaining have been exhausted.

In concluding his minority opinion Mr. du Pont states: "The company shall post a notice to the effect that since no election of representatives of the Buffalo plant of the National Aniline & Chemical Co. has been held those employes desiring representation other than the representatives of the Aniline and Chemical Workers' local No. 18705 may choose their representatives for bargaining with the company or may negotiate with the company individually."

National Aniline case basically deals with the open or closed shop in the chemical field. If the A. F. of L. local forces recognition in writing from National Aniline as the bargaining agency for all of the plant employes, despite the fact that no election has been held in which the employes have signified a desire for such representation, then a major victory will be won by the Federation of Labor.

In connection with this representative case figures recently released by the National Industrial Conference Board are significant. The report states that the rate of increase in the adoption of collective bargaining arrangement has diminished sharply in

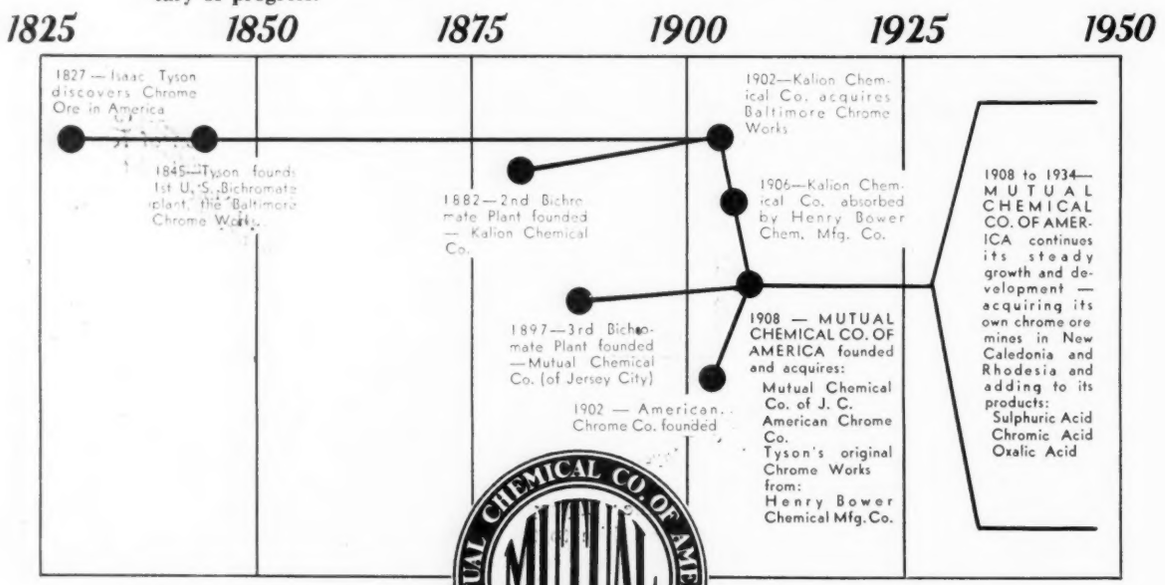
Bunsen created something besides a small blue flame

When Robert Wilhelm Bunsen perfected his burner in 1860, he gave science an intense blue flame which opened the way to new opportunities for research.

Similarly, when thirty-three years before this (1827) Isaac Tyson discovered stones, which he recognized as Chrome Ore, on a truck in Baltimore, he started a chain of circumstances which lead to the establishment of an important new industry in the new world.

In 1845 Tyson established the first Bichromate plant in the United States, the Baltimore Chrome Works, which was located on the same site as the present Baltimore plant of the Mutual Chemical Co. of America.

The Mutual Chemical Co. of America not only inherited the property of Tyson's original enterprise, but also became the heir to all the development and technique of a century of progress.


1825
1850
1875
1900
1925
1950
1827 — Isaac Tyson discovers Chrome Ore in America
1845—Tyson founds 1st U. S. Bichromate plant, the Baltimore Chrome Works
1882—2nd Bichromate Plant founded — Kalion Chemical Co.
1897—3rd Bichromate Plant founded —Mutual Chemical Co. (of Jersey City)
1902 — American Chrome Co. founded
1902—Kalion Chemical Co. acquires Baltimore Chrome Works
1906—Kalion Chemical Co. absorbed by Henry Bower Chem. Mfg. Co.
1908 — MUTUAL CHEMICAL CO. OF AMERICA founded and acquires:
Mutual Chemical Co. of J. C.
American Chrome Co.
Tyson's original Chrome Works from:
Henry Bower Chemical Mfg. Co.
1908 to 1934— MUTUAL CHEMICAL CO. OF AMERICA continues its steady growth and development — acquiring its own chrome ore mines in New Caledonia and Rhodesia and adding to its products:
Sulphuric Acid
Chromic Acid
Oxalic Acid

Bichromate of Soda
Chromic Acid

MUTUAL CHEMICAL CO. OF AMERICA
MUTUAL
NEW YORK, N.Y.

Bichromate of Potash
Oxalic Acid

FACTORIES
Baltimore Jersey City

MINES
New Caledonia South Africa

The History of Mutual is the Chemical History of Chrome in America

recent months, according to preliminary figures. Statistics were gathered from 2,681 companies employing 2,093,503 wage earners. This is the 2nd survey of collective bargaining conducted by the Conference Board, the 1st covering the situation in November, '33, and the 2nd in March, '34. Same companies were included in both surveys so that the results are comparable.

On the basis of information reported the proportion of employes still dealing individually with their employers has declined from 48.9% of the total in November, '33, to 43.8% in May, '34, a drop of about 5% of the total. Employes under plans of employee representation increased from 43.2% in November to 46.5% in May, and employes dealing through organized labor unions increased from 7.9% of the total to 9.6%. From November to May the number of workers dealing with their employers through labor unions increased 47,519, as compared with an increase of 134,473 in the number of workers in employee representation plans.

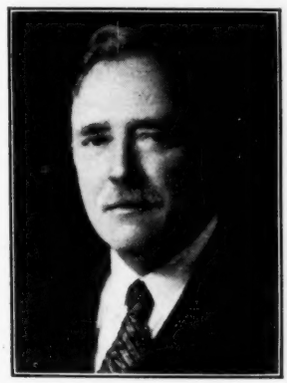
Of the employes in companies which in November, '33, were dealing exclusively on an individual basis, 93.4% were still doing so in May, while 3.6% had changed to employee representation and 3.0% to labor unions. Of the employes in companies which in November were dealing entirely through employee representation, 97.4% were still doing so in May, 1.9% had changed to labor unions, and 0.7% had returned to individual dealing. Of the employes in companies which in November dealt exclusively through labor unions 98.9% were still doing so in May, 0.6% had returned to individual dealing, and 0.5% had changed to employee representation.

The individual basis of employer-employee dealings still predominates in small establishments. Of the reporting companies with less than 100 employes, 88% were dealing individually, 8% had works committees, and 4% dealt through labor unions. Employee representation is most general in the very large companies, employing more than 5,000 being found in 52% of the companies of this size that reported, as compared with 38% dealing individually and 10% through labor unions. Among the medium size companies, employing from 500 to 2,500 wage earners, 10% dealt through labor unions, 28% had employee representation and 62% were dealing individually.

•Society of Chemical Industry, Basle, (Swiss dye producer) is celebrating 50 years of existence.

Obituaries

General Herman A. Metz, 66, one of the most widely known and colorful figures in chemical industry, died May 17 in the New Rochelle Hospital. Death came after but a 3 day illness.



Chemical industry mourns the loss of a great leader

General Metz was born on the lower East Side of N. Y. City. At an early age his family moved to Newark, N. J. At 14 he became office boy with P. Schulze-Berge, founder of the business later and better known as Victor Koechl & Co. At 16 he became the sole support of his family, but with dogged determination continued studying chemistry at night at Cooper Union. He advanced rapidly. In '93 he became vice-president and treasurer; six years later he controlled majority of the stock and was elected president. In '03 the chemical and dyestuff departments were separated from the pharmaceutical end of the business and incorporated under the name of H. A. Metz & Co. Manufacturing was then done by Consolidated Color & Chemical and General Metz held the presidency of this concern. In addition he was president of H. A. Metz Laboratories. In '26 he was active in the formation of General Dyestuff and was its 1st president, later becoming chairman of the board. He was elected president of Advance Solvents & Chemical when that company was formed a few years ago. History of the development of the dyestuff industry in this country is intimately interwoven with the name of Herman A. Metz.

His career of more than 50 years was not one-sided. He was prominent in the political, social and economic life of N. Y. City. He was city comptroller, '06-'10, a member of the House of Representatives, '13-'15, and an outstanding power in independent democratic circles. He rose to a brigadier-generalship in the National Guard, and at one time commanded the famous "Fighting 14th of Brooklyn." In '31 he was tendered a luncheon by the Board of Trade for German-American Commerce in celebration of his 50 years in business. His last outstanding "job" was to go to Germany last year with Publisher Ridder (*N. Y. Journal of Commerce*) to report seriousness of the anti-Nazi boycott in this country.

Chemical executives attending the services included B. R. Armour, American Aniline Products; C. W. Kuhl, Carbic Color & Chemical; William F. Zipse and Arthur Wiehl, Geigy; L. S. Kohnstamm and Joseph Kohnstamm, H. Kohnstamm & Co.; Dr. George A. Smith, Frederick H. Levey Co.; Joseph Mangin, United Color & Pigment; Howard S. Neiman, *Textile Colorist;* Dr. Eugene Schwarz, *The Melliand;* William Haynes, publisher, CHEMICAL INDUSTRIES; H. H. Replogle, Sylvania Industrial; W. Paul Pickhardt; Dr. H. Grimmel, General Aniline; C. B. Peters, Synthetic Nitrogen; William S. Gray; Dr. R. Hutz, president, General Aniline; and Ernest K. Halbach, president, General Dyestuff.

COMING EVENTS

Ninth International Congress of Pure & Applied Science, Madrid, Spain, June 10-17.
National Fertilizer Association, 34th convention, White Sulphur Springs, June 12-14.
American Electroplaters' Society, Hotel Statler, Detroit, June 11-14.
Eleventh Colloid Symposium, Madison, Wis., June 14-16.
N. Y. State Sewage Works Association, Jamestown, N. Y., June 15-16.
National Association of Purchasing Agents, Cleveland, June 18-21.
American Society of Refrigerating Engineers, semi-annual meeting, Skytop, Pa., June 21-22.
A. S. T. M., annual meeting, Chalfonte-Haddon Hall, Atlantic City, June 25-29.
Pa. Water Works Operators Association, State College, Pa., June 25-27; also Pa. Sewage Works Association.
Technical Association of the Pulp & Paper Industry, fall meeting, Portland, Ore., Aug. 28-31.
American Public Health Association, Pasadena, Calif., Sept. 3-6. W. R. Walsh, Secretary, 450 7th Ave., N. Y. City.
American Trade Association Executives, Wernersville, Pa., Sept. 9.
A. C. S., 88th meeting, Cleveland, Sept. 10-14.
American Gas Association Convention and Exhibition, Atlantic City, Week of Oct. 29.
National Paint, Varnish & Lacquer Association, Annual Convention, Washington, Hotel Mayflower, Oct. 31-Nov. 2.
American Bottlers of Carbonated Beverages, 106th Armory, Buffalo, N. Y., Nov. 12-16.

LOCAL

Philadelphia Section, American Association of Textile Chemists & Colorists, Outing, Torresdale Golf Club, Philadelphia, June 15.
Oil Trades Association of N. Y., Outing, Travers Island, June 19.
Chemical Salesmen's Association, 1st golf date, June 20, Bonnie Briar Country Club, Larchmont, N. Y.
Chemists' Club (N. Y.) Golf Tournament, Westchester Hills Golf Club, White Plains, June 26.
Secretaries of Chemical Associations and Groups allied to chemistry are urged to make use of this column.

David Wesson

David Wesson, 73, pioneer in development of cottonseed oil products, died at his home in Montclair, N. J., May 22. Inactive for several months he still held the position at the time of his death of technical director of Southern Cotton Oil, in which capacity he had served since '18.

His researches revolutionized the cottonseed oil field

Born in Brooklyn, he attended Brooklyn Poly and later M.I.T., teaching at the latter institution for a short period before joining the chemical staff of N. K. Fairbanks & Co., Chicago. In 1890 he became president of American Cotton Oil and at the same time entered the bicycle manufacturing field. Foreseeing the end of the bicycle era he dropped this activity, turning his full attention to cottonseed oil with Southern Cotton Oil. He was a member of a number of scientific societies and was an A.I.Ch.E. president. Surviving are his widow, 4 children and 9 grandchildren.

Carl Olaf Lundholm

Carl Olaf Lundholm, 84, internationally known explosives pioneer and chemist, blind for several years, died May 9 in London. In '78 he started with Nobel's Explosives, now I.C.I. He opened 1st explosives laboratory in the British Isles, and for 36 years dominated the industry. Under his direction ballistite was brought out in '90, guncotton in '92, cordite in '95, glycerine refining in '96, picric acid in 1900, and smokeless powders in '01. He came to this country on a war mission in '18.

Andrew White Crookston

Andrew White Crookston, 84, 1st to commercially exploit North African phosphate deposits over a half century ago, died recently at Safaga, Upper Egypt, while busy opening up new fields. At the time of his death the aged but active pioneer was chairman and managing director of Egyptian Phosphate.

John Lovering

From England comes announcement of the death of John Lovering, 84, one of the oldest and most outstanding personalities in the china clay field. He was known all over the world and for years was senior partner in Messrs. John Lovering & Co. Five years ago the company became Lovering China Clays, Ltd., which is one of the 3 large firms now absorbed in English Clays, Lovering, Pochin & Co., Ltd.

Other Industry Deaths

Joy Morton, 78, Morton Salt chairman, famous horticulturist, May 9 of a heart attack. . . . Theodore Herman, 65, former National Lead purchasing agent, May 2 at his home in Brooklyn. . . . Henry T. Koenig, 42, martyr to radium research, on May 21. Chemist Koenig was the 20th to die of the 20 scientists who aided Mme. Curie. . . . James J. Blanchard, 68, for many years connected with the insecticide industry, May 23. . . . Frederick W. Burnside, 74, member of the firm of L. N. Jackson & Co., (chinawood oil and varnish gums) on May 23 following an operation for an intestinal disorder. He was connected with McKesson & Robbins for many years and last year with L. N. Jackson of the same company formed L. N. Jackson & Co. . . . Dr. William Hoskins, 72, prominent Chicago chemical consultant, on May 18. . . . Jesse Briggs Churchill, 59, a N. Y. City chemical consultant, on May 21. . . . Harry E. Morton, connected with American Hard Rubber for 54 years, on May 17.

Associations

M. C. A. 2-day meeting at Skytop, Pa., brought together a large group of chemical executives who gathered to discuss a number of the pressing problems confronting the chemical and allied industries. Program opened with the presidential address of Cyanamid's William B. Bell, president of the Association and also president of the Chemical Alliance. Merrimac's president, Charles Belknap, chairman of the association's executive committee, presented a summary of the work done in the last 12 months. Dean Clark, chemical code director, spoke on "Labor Policy and the NRA," and the guest dinner speaker was Ralph West Robey, noted financial writer.*

* All officers were re-elected, and August Koch, Victor Chemical president and Benjamin Mechling, Mechling Bros. Chemical, were added to the executive committee.

CHEMICAL INDUSTRIES' medal, first awarded in 1930 to Pierre S. du Pont, as the then outstanding chemical

Horace Bowker, wartime Chemical Alliance head, presents CHEMICAL INDUSTRIES *Medal to President Bell*

executive, was presented at the dinner to Mr. Bell for his distinguished services in behalf of the industry. Presentation of the medal was made by A. A. C.'s Horace Bowker who headed the Chemical Alliance during the war period. (See page 493, this issue.)

The Synthetic Organic Chemical Manufacturers' Association gathered at Skytop on June 7 and 8 for the annual outing and attended the M. C. A. dinner meeting.

Chemists' Club to Golf

The Chemists' Club (N. Y.) golf tournament (a husky "two-year-old youngster"—and already one of the outstanding events of the summer season) will be held June 26 over the sporty Westchester Hills Golf Club at White Plains.

A total of 9 prizes, divided between members and guests, will be offered. President Marks has donated a cup to be awarded to the member turning in the lowest gross score for the day. Liberal handicaps are promised. Play starts at 10 A.M. and the dinner is scheduled for 7 P.M. The Binding Fund of the library will receive the profits—all prizes have been donated. "Who's Who" in the chemical and allied fields will tee off June 26. Mathieson's "Bob" Quinn will again act as "Maestro" and reservations can be made by phoning Eldorado 5-6190.

Salesmen Change Rules

Chemical Salesmen's Association, influenced possibly by the N. Y. City Fusion or reform regime, or perhaps as one association official (who must remain unnamed) has strongly intimated that the Alverez and Orem homesteads have reached the prize saturation point, a change in past practice this year will be the elimination of low gross prizes in an attempt to

spread prize winners over as large a portion of the field as possible. Instead, lower handicap golfers will play in "Class A" group and divot diggers will have a little "private game." All games at the "19th" hole will be open with neutral "bones" supplied. As usual 4 tournaments will be run—1st June 20, Bonny Briar, Larchmont; 2nd July 10 at a N. J. club; 3rd will be held on Long Island; and 4th will be the championship tournament.

Association Notes

Sheppard T. Powell, consulting sanitary and chemical engineer, Baltimore, will deliver the A. S. T. M. Marburg lecture at the Atlantic City meeting—subject: "Water As An Engineering and Industrial Material."...W. H. Bassett, American Brass metallurgical engineer, has been nominated for the presidency. ...A. A. C.'s Horace Bowker spoke on "The Agricultural Background" before the annual general management conference of the American Management Association at the Pennsylvania, N. Y. City, May 24....Roscoe Edlund, manager, American Soap & Glycerine Producers, was one of the discussion leaders at the conference....Dr. Henry G. Knight, chief, Bureau of Chemistry & Soils, spoke before the Kanawha Valley A. C. S. Section recently....*I. & E. C.* editor, Dr. Harrison E. Howe, will discuss the "Children of the Depression" at the annual meeting of the National Association of Purchasing Agents, June 18....J. Lloyd Downs will receive the Schoellkopf Medal of the Western N. Y. A. C. S. Section for his work in producing sodium directly from salt (the Downs cell).

American Bottlers of Carbonated Beverages (there are 7,000 in the U. S.) will hold its annual convention in the 106th Armory, Buffalo, Nov. 12 to 16. Manufacturers of cleaning materials are exhibitors and already J. B. Ford has reserved display space....Dr. Fred. O'Flaherty, chemist, Tanners' Council Laboratory, Cincinnati, was elected president of the American Leather Chemists' Association at the May annual meeting at Skytop, Pa. Dr. Max Bergmann, brilliant protege of Emil Fischer, former head of the Kaiser Wilhelm Research Laboratory of Dresden and now with the Rockefeller Institute, was the guest speaker....Drug, Chemicals and Allied Trades' Group of the N. Y. Board of Trade is starting a drive for membership.

Thomas Midgley, Jr., Ethyl Gasoline vice-president, has been elected chairman of the A.C.S. board.

Harold Bennett, Melrose Chemical head has returned from his Nova Scotia hunting lodge.

Personal

A. I. C. Honors Conant

Harvard president, Dr. James Bryant Conant, brilliant organic chemist, received the American Institute of Chemists' medal May 21 at a dinner held at the Chemists' Club (N. Y.), in recognition of his "many contributions to chemical science." A. I. C. award is the 4th distinguished scientific honor received by this 41-year old chemist within the past 2 years. In February, '32 he was awarded the Chandler Medal, a month later the Nichols Medal, and at a recent mid-year convocation, the University of Chicago conferred the honorary degree of Doctor of Laws for his eminent work in chemistry and his standing in American education.

In his speech of acceptance Dr. Conant pointed out that "team-work" among investigators in the various highly specialized fields of knowledge was now more desirable and necessary than isolated efforts of brilliant individuals. Prof. Hans T. Clarke, Columbia, a friend and associate of Dr. Conant for many years, made the presentation. Other speakers included *N. Y. Times'* editor, Dr. John H. Finley, and Dr. Henry G. Knight, A. I. C. president. Former A. I. C. medalists include: Columbia's Henry C. Sherman, Dr. Charles H. Herty, Andrew and Richard B. Mellon, the late George Eastman, and Mr. and Mrs. Francis P. Garvan.

Gathered Here and There

Dr. Chaim Weizmann, head of the Commission for Settlement of German Jews in Palestine, better known in chemical fields as discoverer of fermentation process for manufacture of acetone and butyl alcohol (made in England during the World War), will not come to the U. S., due to serious illness. ...William W. Higgins, N. Y. United Carbon manager, is ill....Miss Jane Grasselli, daughter of Mr. and Mrs. Eugene Ramiro Grasselli, was married in Rome May 8 to Count Pier Buzzi Gradenigo, Italian Consul in Cleveland. Engagement was announced in March. ...Medley G. B. Whelpley is off American Express board....Godfrey L. Cabot, president, Godfrey L. Cabot (carbon black), sailed May 18 on the *Statendam* for a meeting of the Comite Directeur de la Federation Aeronautique Internationale. Mr. Cabot, well-known as an aviation enthusiast (he was the oldest navy pilot during the war), is vice-president of the federation and its next meeting will be in Washington in October, largely through his influence.

Francis J. Curtis, Merrimac, in a radio address May 6, traced the influence of science in the field of chemistry on the destinies of nations and peoples. "Scientific revolution" is steadily engaged in raising real wages was an important point stressed by Mr. Curtis....Emil W. Schwartz, chief chemist, G. E.'s Bridgeport rubber factory, is the Charles A. Coffin Award winner....Cyanamid vice-president, Joseph O. Hammitt, and Mellon Institute director, Edward R. Weidlein, were among the chemical leaders present at Alfred P. Sloan's forum on progress at Chicago May 25. Official title for the gathering was announced by General Motor's president as "Previews of Industrial Progress in the Next Century."...Irenee du Pont has been elected a vice-chairman, National Industrial Conference Board. A. F. Bemis, president, Bemis Industries (bags), and Elon H. Hooker, president, Hooker Electrochemical, are on the executive committee.

Jean Farleigh, daughter of Harry Farleigh, was recently voted the best dancer and the most feminine by the Wellesley senior class....Sir Robert Mond, brother of the late Lord Melchett and chairman of the Jewish World Federation, arrived on the *Majestic* May 25. ...Bakelite's Dr. R. J. Moore has been elected president of the U. S. section of the Society of Chemical Industry.

And, In Closing

W. W. Higgins, manager of the New York office of United Carbon, and widely known in the carbon black industry, and Mrs. Higgins sailed May 19 for Europe for a month's vacation.

Du Pont's assistant manager of safety, George H. Miller, spoke on "Selling Safety to The Employee," at the Metropolitan Philadelphia Safety Council June 4.

Givaudan-Delawanna's Dallas, Tex., representative, Paul M. Wagner was in N. Y. City recently, his 1st visit in nearly 2 years.

Personnel

Philipp Bros., N. Y. City, have increased chemical dept. personnel through the addition of Frank Edwards as assistant to George F. Smith, general manager, and W. R. Andrews to the New England headquarters....W. M. Balling, former Western Borax superintendent, has opened consulting offices at 1141 Huntington Drive, South Pasadena, Calif....Frank Harkins has resigned from the advertising dept. of U. S. Rubber to become a Barrett advertising executive....William R. Ellis has been

appointed assistant general manager of Hercules' explosives dept. For years he was connected with Hercules' West Coast offices in various capacities.... Samuel E. Hackett, former Laughlin Steel sales manager, has succeeded George Gordon Crawford as president. ...Harry F. Kolb, Hercules' Pacific coast nitrocellulose and naval stores representative, has been made San Francisco assistant manager.

Lord Shaughnessy has resigned from the presidency of Canadian Industrial Alcohol.

Trips

M. F. Austin, manager, W. R. Grace vegetable oil dept., has returned from a western trip....John B. Ford, Jr., a Michigan Alkali vice-president, was on the Coast last month....A. J. Lynch, A. J. Lynch & Co., Los Angeles, is in N. Y. City, by way of the Canal....Kentucky Color & Chemical's chemical director, Carl A. Henlein, is back in Louisville after a protracted California trip. John D. Billings, assistant secretary, William S. Gray, is back after an extended midwestern trip.

Foreign

Jap. Gains In '33

Production gains made by Japanese chemical plants in '33 were maintained in January. Combined output of 8 leading chemicals produced totaled 224,074 metric tons in January, '34, compared with 204,307 metric tons for the corresponding month of '33, an increase of approximately 10%.

During '33 output for this same group totaled 2,473,087 metric tons, an increase of approximately 14% over the preceding year when production approximated 2,163,840 tons. Each of the 8 items produced in '33 registered gains over '32, increases ranging from 4 to 50% in volume. Superphosphates leading item of chemical production reached 1,127,977 metric tons, followed by sulfate of ammonia with 713,746 tons, and cyanamid with 157,421 metric tons. Other items on the list include sulfur, bleaching powder, caustic, aniline, and soda ash.

As there has been no slackening in domestic demand for chemicals in Japan, it is expected that production during the remaining months of '34 may show still further gains, the report states. More new capital was invested in Japan's chemical industry in '33 than in any other line and made up 7.2% of the total investment in all Japanese corporations employing more than 5 workmen. Of a total of 368,-119,000 yen invested in new enterprises and in the expansion of all companies during '33, chemical industry accounted for 189,870,000 yen, or more than 50%.

Japanese Chemical Notes

Tsurumi Soda Kogyo K. K., has recently been formed with a capital of 1,500,000 yen for the production of caustic and ash, former by the electrolytic process. Hodogaya Soda K. K. has increased its capital from 1,-000,000 to 3,000,000 yen and will manufacture new chemicals and also dyestuffs.

Nihon Yode K.K. (Japan Iodine) has altered name to Nihon Denki Kagaku Kogyo K.K. (Japan Electro Industrial) and has doubled its capital structure. It is said to be contemplating production of fertilizer grade of potassium sulfate. . . . Japan Oil Co., with 3 carbon black plants operating near the Kinsui field, manufactured during 1st 11 months of '33 1,200,658 kilos. Combined daily capacity is about 3,600 kilogs.

Italian Dyestuffs

An Italian national dyestuffs committee will propose (after study of domestic industry) measures for its protection and development. A central sales bureau may be formed. U. S. export and import Italian dyestuffs trade is small.

Nitrogen Briefs

Holland will take 30-100,000 tons of Chilean nitrate, 20% of the proceeds to be used to liquidate frozen Dutch credits. . . . Peru is reported planning development of nitrate deposits.

Foreign Trade

U. S. Chemical Trade Gains

Substantial increases in imports and exports of chemicals and allied products since the beginning of '34 are indicated by figures just made public by C. C. Concannon, chief of the Commerce Dept.'s Chemical Division. Improvement was general throughout the lists but most noticeable in connection with raw materials used in industry. Imports during 1st quarter were valued at $26,782,000, an increase of 53% compared with corresponding period of '33, and exports increased 35% to a total value of $29,297,000.

Outstanding increases among imports were noted for varnish gums which were 46% higher and for fertilizers which increased 67% over 1st quarter of '33. Conspicuous gains were also noted in imports of camphor, carnauba, pyrites, dyes, perfume materials, and many classes of industrial chemicals.

Large gains were recorded in exports of agricultural insecticides and sulfur, both of which doubled in quantity compared with 1st quarter of '33. Exports of caustic and ash likewise registered substantial gains and nearly all American industrial chemicals and industrial chemical specialties were in greater demand in foreign countries. Smaller increases were noted in exports of pigments and paints.

Export demand for American pigments, paints, and varnishes increased considerably in '33. At the same time import demand for raw materials used in paints and varnish increased notably. U. S. exports of pigments, paints, and varnishes were valued at $11,834,000 in '33, an increase of $1,754,000 compared with '32. Carbon black, leading single item, was valued at $5,552,000 against $4,436,300 for '32; foreign sales of ready mixed were valued at $2,147,-000, a slight increase over '32 when shipments were valued at $2,015,000. A total of 100 markets share in American ready-mixed paint export trade.

Turpentine '33 exports totalled 14,-239,000 gals., valued at $6,124,600, compared with 11,468,677 gals., valued at $4,639,000, for '32. Tung oil imports increased to 118,760,000 lbs. in '33 from 75,922,000 lbs. in the preceding year, value increased from $3,434,000 to $4,833,000.

Germany Reports Recovery

Germany's trade in chemicals and allied products increased substantially during 1st 3 months of '34. Exports increased 30% to a total of 696,300 tons compared with the 1st 3 months of the preceding year, and imports increased 14% to 651,600 tons. Converting mark to dollars at the rate of 34c, value of exports for the 3-month period amounted to $58,300,000 and imports were valued at approximately $17,900,000, which values almost doubled those for the corresponding period of '33.

Increase in exports was due largely to heavy foreign shipments of potash fertilizer and industrial chemicals, particularly to the U. S., though exports of higher valued commodities, such as synthetic camphor, dyes made substantial gains. Though complete figures are not available it appears that shipments from Germany to U. S. reached 92,300 tons, approximately double those for the corresponding period of '33. Exports to

Argentina and Brazil increased only slightly. Germany's imports of sulfur, phosphate rock and carbon black from U. S. improved considerably, but receipts of American rosin, turpentine, coal tar and coal tar pitch were smaller.

More rosin was imported into Germany from Portugal and France and more turpentine from Russia, Spain, Portugal, Greece, and France than during the 1st 3 months of '33. Imports of phosphate rock from Russia were double those for the 3 months of '33.

Industrial chemical and coal tar dyestuff output is reported 8% greater in quarter ending Mar. 31, when compared with same period a year ago. It was also slightly greater than the last quarter of '33. Average number of chemical unemployed was 12,000 in the 1st quarter of '34. Total registration of workers is about 100,000.

Traffic

Dow Chemical's complaint against rates from Midland to East and Northeast points in which it claimed that application of commodity rates to its shipments on a basis higher than class rates was unreasonable and discriminatory has been rejected by an I. C. C. examiner. He did concede that for the future, the higher commodity rates will be unreasonable to the extent that they exceed the contemporaneous class rates.

Walter G. Patton is St. Joseph Lead's new traffic manager. J. E. Bouchard is assistant with Bonne Terre, Mo., headquarters.

Revised freight schedules of eastern railroads on bartyes and blanc fixe have been received by E. A. Leveille, chairman of the N.P.V. & L. Association traffic committee. New rates on barytes became effective June 1. Those on blanc fixe went into effect Apr. 1.

New Construction

Titanium Pigment will erect a $3,000,000 plant at Sayerville, Middlesex County, N. J., Wigton & Abbott, N. Y. City, general contractors. On completion Brooklyn laboratories will be moved . . . Research Industries, Baltimore, is erecting an addition one story high on plot, 30 x 60 . . . General Plastics, North Tonawanda, N. Y., is to erect a 2-story plant addition.

Customs and Tariffs

U. S. Court of Customs and Patent Appeals issued on May 31 following decision of interest to the chemical and allied fields.

No. 3751—Sylvania Industrial Corporation vs. U. S. Parts of a machine for the manufacture of pyroxylin material were assessed with 10% additional duty as not being marked with the country of origin. The importer protested and the U. S. Customs Court overruled the protest. Their judgment is reversed on the ground that a certain document was improperly received in evidence and the case is remanded for a new trial.

No. 3685.—U. S. vs. D. L. Moss & Co. Powdered egg albumen was assessed at 18c per lb. as dried egg albumen. Importer protested that it was properly dutiable at 11c per lb. as egg albumen prepared or preserved. U. S. Customs Court sustained the protest and their judgment is reversed.

Nos. 3695 and 3696—U. S. vs. Arkell Safety Bag Co. Issue here was the dutiable value of kraft wrapping paper, importer contending for the export value at which the merchandise was entered, and the Government contending for foreign value. U. S. Customs Court sustained the contention of the importer and their judgment is reversed and the case remanded for a new trial.

Mineral Oil Residue

In a divided opinion, Justice George S. Brown, dissenting, Customs Court has overruled a protest of Borne Scrymser (N. Y. City), for free entry of mineral oil residue assessed at 20% under the tariff provision for oils changed in properties by chemical process and not specially provided for. Judge Charles P. McClelland writes the majority decision on a finding that the product results from refining of a petroleum distillate and that it is not such of itself. Justice Brown sides with the plaintiffs and argues that merchandise distilled from petroleum and afterward cleaned or refined comes under the classification of mineral oil and not under that relating to fish, vegetable and animal oils.

Interesting Decisions

Two decisions have been handed down in the Customs Court on protests arising at Los Angeles in both of which the question at issue involved the status of drums claimed to be of American origin used as containers and returned, the *N. Y. Journal of Commerce* reports. Free entry is provided in the tariff if no drawback has been collected at time of exportation and because of the difficulty of determining that in many cases Treasury Department regulations permit payment of 24c per drum in lieu of other duty, if proof of no drawback is not furnished.

In one of the protests Los Angeles Soap claimed that drums containing nut oil should have been admitted free or assessed at the 24c each instead of at 25%. They were passed as American goods by Government appraisers, but the collector questioned the identity. Court holds that there was nothing about the drums to indicate the origin, although it was shown that they had been exported from this country previously and the suit is dismissed. In the 2nd case Union Oil claimed free entry for drums of American origin but assessed at 24c in the absence of proof that no drawback was collected. Importers were also the exporters and it was shown that they did not claim drawback on any of their export shipments. Court holds that the regulation for arbitrary duty assessment of 24c is intended to apply only when American drums are brought abroad by other than the exporter and sustains the protest.

Duty On Laminated Sheets

Import duty of laminated sheets of which any synthetic resin or resin-like substance is chief binding agent, is reduced to 15c a lb. and 25% ad valorem, according to Presidential proclamation, following a Tariff Commission investigation. Former rate—25c and 30% ad valorem.

Costs were ascertained for laminated sheets with a paper base in qualities known to the trade as X, XX, and XXX produced by the domestic companies and as normal, electrical, and tropical produced by the German companies. Qualities designated as X were important in domestic production, being about 50% of the total production of paper base sheets of the 5 domestic companies; normal quality was important in German production being over 75% of the total output of paper base sheets.

Commission found that the domestic X quality and the German normal quality were like or similar for purposes of Section 336 of the Tariff Act of 1930. Difference in costs of production of these qualities was found to be representative of the difference in costs of production of all grades of laminated sheets.

Average costs per lb. delivered at N. Y. City for the domestic X quality was 52.5 cts. and for the German normal quality 27.9 cts. Excess of

the domestic costs over the German costs was 24.6 cts. Equivalent of the present duty (25 cts. per lb. and 30% ad valorem) was 36.8 cts. per lb., being 12.2 cts. per lb. in excess of the difference in costs. A limited number of mimeographed copies of the report are available now. A printed edition will be issued later.

Sodium Cyanide Ruling

In an order approved by T. J. Coolidge, Undersecretary of the Treasury, collectors of customs are instructed to proceed with appraisement of sodium cyanide shipments from Germany. Action has been delayed for nearly a year on account of suspected dumping, but investigation failed to disclose facts to justify a finding.

Camphor Tariff Hearing

Tariff Commission will hold a hearing June 21 pursuant to provisions of Paragraph 51 of the 1930 Tariff Act to ascertain ratio of domestic production to domestic consumption by quantity of synthetic camphor in 6 months' period ending June 17, '34. Duty is 5c on synthetic against 1c for natural, providing a certain minimum ratio is maintained by domestic manufacturers (du Pont is the only domestic producer). See CHEMICAL MARKETS, Sept. '32, p. 235; also CHEMICAL INDUSTRIES, Aug., '33, p. 155.

Italian Tariff Revamped

A number of changes in Italian import tariff have been operative since April 25. Rate on sulfide of soda has been increased from 36.70 to 58.72 lire per 100 kilogs; that on tartaric from 55.00 to 183.50; and that on crude aniline and toluidine and on aniline hydrochloride from 147.00 to 256.90 lire per 100 kilogs. Duty on crude benzol, toluol, and xylol remains at its former rate of 7.35 lire per 100 kilogs, and that on the pure solvents at 29.40 lire. Refined benzol, toluol, and xylol, hitherto unspecified separately in Italian import tariff are now made dutiable at 23.35 lire per 100 kilogs. All products mentioned are also subjected to special surtax of 15% ad valorem. It is also to be noted that benzol, toluol, and xylol, refined or pure, for use as a raw material in the manufacture of artificial dyestuffs, pharmaceutical products, or varnishes and lacquers are dutiable at 14.70 lire per 100 kilogs under conditions to be prescribed by the Minister of Finance.

Foreign Tariff Changes

Belgium has removed carbon black tariff providing importers prove product will be used exclusively in rubber, ebonite, paints, polishes, printing inks, and papers....United Kingdom May 16 imposed a 20% ad valorem duty on hydrated aluminum oxide (from sources outside the Empire) in place of former £3 rate. On May 4 raw diatomaceous earth, rosin, and raw tung oil were added to the Free List....Butyl alcohol, heretofore dutiable in Canada at 25% ad valorem, is now duty free from all sources to Oct. 15, '34, when it will be renewed. Salt cake duty has been reduced under British preferential tariff from ½c to 1/5c per lb., but general and intermediate rates remain at 3/5c per lb. Nitrate of soda, for use for most purposes, is to be duty free from all sources. So also phthalic anhydride and ethylene glycol when imported by synthetic resin manufacturers for use in their own factories. Titanium oxides, heretofore dutiable at 15% under British preferential tariff, are to be admitted free. Flotation agents of certain types are to be admitted free from all sources. Cyanide mixtures for combating insects will also be admitted free from all sources. These changes were placed in effect Apr. 19, subject to such amendments as may be made in the proposals while under consideration by the Legislature.

Great Britain has increased the lead acetate duty from 10% to 25% ad valorem....Canada has set 90c as the duty on dried egg albumen....Sprays, powders and other preparations for eradicating agricultural and fruit pests in containers weighing more than 20 kilos (a kilo is 2.2046 lbs.) each and apparatus for distributing them that weigh from 100 to 500 kilos each, are exempt from import levies in Mexico under a decree issued by President Rodriguez.

"Quotes"

Sir Harry McGowan: "I am as yet disappointed that it has not been possible to reach a world agreement for the coordination of the production and marketing of nitrogenous fertilizers."

Horace Bowker, A.A.C. president: before American Management Association: "The best interests of agriculture will be served by removing the obstacles which stand in the way of recovery of the country's heavy industries; upon this largely depends further restoration of industrial purchasing power and further recovery for agriculture. The recent outcropping of another batch of radical inflammatory proposals is also calculated to obstruct the progress of agricultural recovery."

Sir Ernest Benn, outstanding British publisher of trade papers: "The gravest danger facing the National Government is the bureaucrat's advance agent, the planner."

Solvay Goes to Baton Rouge

It is learned from reliable sources that the Solvay Process Co. will build a completely integrated alkali plant on river front property at Baton Rouge, La.

For several years Solvay Process has had the erection of a southern plant under consideration as a means of serving more efficiently its many customers in that territory. Exhaustive studies of sites have been made through the past 5 years. Baton Rouge property will permit direct shipment by ocean vessels as well as by rail. Part of the plant's output will move by water to Hopewell, Va., to supply an associated company.

Solvay Process is the largest producer of alkalies in the world. It was 1st to produce ash in the U. S., its Syracuse, N. Y., plant having started production in 1882. Since that time the company has steadily increased its production facilities plants are now operated at Syracuse, N. Y. and at Detroit, Mich. With its new plant at Baton Rouge, Solvay Process will thus be exceptionally well equipped to serve the entire alkali market in the U. S.

Victor Again at Fair

Victor Chemical is again exhibiting at the Chicago World's Fair. Exhibit which attracted wide attention last year is located on the ground floor of the Hall of Science.

Good News

Shawinigan Chemicals has restored a 5 to 7% wage cut given at the height of the depression last year.

Haering's New Feeder

D. W. Haering & Co., 3408 Monroe st., Chicago, manufacturers of the H-O-H water treatments, announce the development and introduction of the new H-O-H Proportioning Unit, an automatic proportioning machine which makes the accuracy of the pitot tube principle practical for the 1st time. This machine will feed liquid chemicals into liquid lines under varying conditions of pressure and in any amounts desired. Machine is entirely automatic. It starts, stops and feeds in proportion to flow. The only manual attention required is the recharging of the unit which may be accomplished in less than 5 minutes and the reagent tanks are made of sufficient size to require this operation only at long intervals.

Unit is also very easy to install as it is only necessary to drill and tap ⅜" in the pipe line in order to install the pitot tubes. Once the tubes are installed it is possible to disconnect the machine and make all piping ar-

rangements or changes from time to time without interfering with the main flow of liquid.

Briefly Told

Dow now has employes' group insurance plan for 3,000—$3,000,000 of group life insurance, accident and health benefits. Metropolitan Life is the underwriter....Northwestern Blaugas, St. Paul, has appointed O. D. Bluthardt, 59 W. Austin st., Chicago, mid-western representative on its new line of 100% phenolic type synthetic resins. Bluthardt also represents R. B. H. Lacquer Base. ...E. M. Sergeant Co. has changed its name to Sergeant Pulp & Chemical—one more representative of its activities.... Barnsdall is consolidating 12 operating companies into Barnsdall Oil Co. Included are: Barnsdall Zinc; Barnsdall Tripoli.

Because Corn Products' Argo plant payroll is 20% ahead of last year Mayor Lambert declared May 18 a holiday.... Du Pont has reduced prices on transparent Cellophane....H. H. Rosenthal Co.'s telephone number has been changed from Caledonia 5-6540 to Ashland 4-7500-7....Arthur C. Trask Co., Chicago, has leased a 2-story warehouse adjoining present location to take care of expanding business....Hercules Powder has opened a Philadelphia office in suite 703 Fidelity-Philadelphia Bldg. in charge of C. H. Boys, formerly head of the Chicago naval stores activities of the Company.

New Locations

Bartlett Chemicals (dealer in industrial chemicals) has moved to larger quarters at 925 Tchoupitoulas st., New Orleans....Armour Fertilizer's N. Y. City offices are now at 120 Broadway. ...Sherka Chemical's offices are now at 86 Orange st., Bloomfield, N. J....H. J. Baker & Brother (N. Y. City fertilizer materials dealer) has moved Baltimore offices to Maryland Trust Bldg. W. Whitely Baker, Jr., is now in charge, succeeding John W. Rutland.

Employment Gains

U. S. factory employment in the manufacture of chemicals and related products showed a small gain between March 15 and April 15, an increase of a little over 0.4% being reported by the Bureau of Labor Statistics. At the end of the period employment stood about 30.6% above the level for the corresponding date in '33. Payroll totals in factories in the chemical group increased 3.6% during the month and stood 41.8% above the corresponding '33 level.

Bureau of Labor Statistics index number for factory employment in the chemical group of industries April 15 was 113.3 (100 = 1923-25 average), compared with 112.8 for March and 86.4 for April, '33. Bureau's index number (same basis) for payroll totals in chemical factories was 92.3 at April 15, compared with 89.1 for March and 65.1 for April, '33. For specific indice figures see page 559.

Washington

Presidential action in curtailing NRA by suspending the codes of a number of the so-called "service" industries was fully anticipated generally throughout the country and therefore did not come as any great surprise to the majority of business men. The Administration has apparently brought sufficient pressure to bear to force the revised Wagner Bill through before adjournment. Passage of the Stock Exchange control bill was completed by Congress on June 1 and the Senate, by a strictly party vote, passed the Administration's Reciprocal Tariff bill on June 5. It is expected that the Senate amendments to the bill will be passed quickly by the House and the measure placed in the President's hands for signature within very few days. It is possible that the Housing Bills, the oil control bill, and the bill amending the AAA will be made "must" items by the President. Just what the fate of the so-called Silver bill will be was shrouded in doubt as the month closed. It may or may not get through. No hope is apparently held out for the Copeland drug and food bill. There is also apparently little hope than Congress will remove the processing tax imposed on coconut oil from the Philippines.

Hatfield Stirs Senate

Senator H. D. Hatfield (Rep., W. Va.,) precipitated the Senate into an "uproar" on May 21 when during debate on the Administration's recriprocal tariff bill he charged that a "tacit agreement" with Germany had been made to exchange American lard for German dyes."

"What!" exclaimed Senator Arthur Vandenburg (Rep., Mich.) "does the Senator mean we already have concluded a treaty without waiting for passage of this bill?"

"I do," Senator Hatfield replied calmly.

In a more formal and detailed speech delivered by the W. Va. Senator the following day he undertook to show: 1. That increases in dollar value of imports during the war and post-war periods were almost entirely a price phenomena. 2. That the present decreases in dollar value of imports back to pre-war levels also are a result of the price decline. 3. That if we wish to increase dollar values of imports it must be through a world-wide price raising program, rather than a reduction in our tariffs.

Senator H. D. Hatfield flays the Administration Reciprocal Tariff Bill

He declared that the argument of the proponents of the pending bill that we should lower duties in order to increase values of imports, in order that we may increase our exports, is especially vulnerable. He demanded that the Senate be definitely advised of pertinent details before delegating to the Administration the right finally to negotiate any trades.

"Unless and until this is done," he asserted, "the Senate should insist that each proposed agreement (1) should be the subject of a public hearing; (2) that it shall be submitted to the Senate for approval; or (3) that it shall be submitted to Congress and a proper period allowed for either the House or Senate, or both, by resolution to indicate approval or disapproval thereof.

"Certainly blanket authority to make any and all trades which might occur to any clerk in any of the interested departments would open the way to the wildest orgy of efforts by importers and exporters to get secret negotiations carried through and in turn would force every American group of farmers, labor, industry and finance to keep research staffs, legal staffs and lobbyists here in Washington, trying to defend their present protection and warding off potential trades."

New Bag Tax Ruling

Taxes on cotton, jute, and paper bags as containers of imported merchandise are being collected by Collectors of Internal Revenue prior to the release of the imports from customs, under amendments to the agricultural adjustment act approved May 9.

Trade Commission Charges

Federal Trade Commission has charged Nacto Cleaner (maker of fabric cleaning fluid) with misrepresenting powers of its product....Adams Paint, Cleveland, has been ordered to cease and desist from certain misrepresentations in sale of paints and roof coatings.

Washington Jottings

U. S. Bureau of Standards is changing its name back to the National Bureau of Standards....National Labor Board in Release No. 4829 has outlined procedure on appeal to the National Labor Board....Distribution of the new code Blue Eagle will be done by code authorities....Copeland-Tugwell Measure seems doomed in drive to adjourn Congress unless the President labels it "must" which is considered unlikely....University of North Carolina director, Prof. Claudius T. Murchison, has been named to succeed Dr. Willard Thorp as director of the Bureau of Foreign & Domestic Commerce, President Roosevelt sending his name for Senate confirmation May 24....PWA Administrator Ickes is reported skeptical of the application of a private group for $20,000,000 of PWA funds to construct an aluminum plant in Tennessee Valley.

Watching the Codes

Bleached Shellac Manufacturing Industry Code became effective Apr. 30 with indefinite stay of waiting period on revised price list. . . . Code for the Spray Painting and Finishing Equipment Manufacturing Industry has been approved by Gen. Johnson. . . . Latter also approved a supplemental code for the carbon dioxide industry, a division of the chemical manufacturing industry, on May 5. Approval is subject to a 6-months' limitation on the provision requiring members of the industry to contract with their jobbers and distributers for the filing of price schedules; and to an indefinite stay of provisions prescribing a waiting period between the time of filing revised price lists and their effective date.

Codes' Personnel

Recovery Administration announced May 30 that official recognition has been extended the personnel of the Emergency National Committee to administer the terms of the liquefied gas industry code.

The members are: J. J. Callahan, Hi-Heat Gas Co., N. Y.; Morse G. Dial, Carbide & Carbon Chemicals, N. Y.; W. H. Anderson, United Motors Service Co., Detroit; A. N. Kerr, Imperial Gas, Los Angeles, Calif.; R. W. Thomas, Philgas Co., Detroit, Mich.; L. H. Spiner, Shell Petroleum Co., St. Louis, Mo. Mark Anton, Suburban Gas Co., Verona, N. J.; W. G. Oliver, Standard Oil Co. of California, San Francisco; W. F. Verkamp Corp., Cincinnati; Milburn Hobson, Skelgas Co., Kansas City, Mo., and Dr. R. W. Miller, Hope Construction & Refining Co., Pittsburgh.

Other Appointments

Naugatuck Chemical E. B. Curtis is an alternate on the code authority of the reclaimed rubber industry. . . . George A. Prochazka, Jr., East Orange, N. J., consulting chemical economist, is administration member of the dry color industry. . . . Charles E. Adams, U.S.I. Board chairman and president of Air Reduction, has been made deputy administrator in charge of the NRA finance and insurance codes. . . . Stuart F. Heinritz, connected with the National Association of Purchasing agents for several years, is administration member of insecticide and disinfectant manufacturing industry code authority. . . . Division Administrator Sol Rosenblatt has been placed in charge of codes for disinfecting and fumigating.

Other appointments include Capt. Hubert B. Bramlet as administration member of the carbon dioxide industry; August Rust-Oppenheim, president of the importing firm, Rust-Oppenheim, Waegen & Co., administration member of the printing ink manufacturing industry, and Capt. Harry R. Lebkicher, C.W.S., administration member for the hardwood distillation industry.

Equipment Code Status

Code for the chemical engineering equipment industry, it is reported, will be signed within a few days. Code was introduced as a division of the basic code of the machinery and allied products industry, the so-called "Mapi," which code was approved Mar. 17 (No. 347 in the list of approved codes).

Definition in paragraph 40 of Article 2 of the basic code of the machinery and allied products industry is as follows: "Chemical Engineering Equipment Supervision" means the manufacture, design, engineering, erection and/or licensing of chemical engineering equipment, together with its accessories and necessary housing, for sale, and/or the licensing of mechanical engineering processes for use in connection with specified chemical engineering equipment, and shall be construed to include all persons engaged in such manufacture, design, engineering and/or erection for sale and/or such licensing; provided, however, that all specific equipment covered by other codes heretofore or hereafter approved under the Act is excluded to the extent of its coverage under such codes.

President Roosevelt favors, according to press reports, letting NRA licensing powers lapse on June 16.

Join the Alliance

Latest to enter the Chemical Alliance fold: Felton Chemical, Brooklyn; Foote Mineral, Philadelphia; Kay-Fries Chemicals, N. Y. City; Seydel & Co., Jersey City. In addition the following have assented to the Chemical Code: Hanovia Chemical & Mfg., Newark; Kay-Fries Chemicals; N. Y. City; Oakite Products, N. Y. City. These names are in addition to those p. 415.

N. Y. Incorporations

Soysein Process Corp., manufacturing of vegetable casein from soybean; filed by Powell Crichton, 475 5th ave., N. Y. City.

Powdex Corp., drugs, chemicals, pharmaceutical supplies; filed by Jacob Greenspun, 381 4th ave., N. Y. City.

Vapoo Products Co., chemical and scientific apparatus; filed by Albany Service Co., 315 B'way., N. Y. City.

National Duralith Co., building and painting materials; filed by Geo. A. Enright, 521 5th ave., N. Y. City.

Feldman Brewing Corp.; filed by Geo. Schachter, N. Y. City, 170 B'way, N. Y. City.

Johnson Fur Dressing Corp.; filed by Feinberg & Feinberg, 145 W. 45th st., N. Y. City. Makray Corp., cleaning fluids; filed by Abr. A. Silberberg, 285 Madison ave., N. Y. City.

In Other Sections

Apex Chemical has been organized at Akron, Ohio, to manufacture and distribute chemicals. Mark F. McChesney, Paul N. Sanderson and L. Summerville are the principals.

Sterling Laboratories, St. Louis, L. C. Eulberg, president, has been incorporated to manufacture disinfectants, germicides, etc., under the trade name "Miracle."

Mace Chemical & Supply, 311 W. 3rd st., Davenport, Iowa, (R. E. Boege, manager) will manufacture a general line of cleaning materials.

The Youngstown Varnish & Color Co. has been formed in Youngstown, Ohio, to manufacture paints and varnish by John H. Ranz and others.

Dept. of Justice, acting for the Dept. of Interior has dismissed suits totalling $1,248,523 brought against Eagle Picher Mining & Smelting, alleging failure to account for royalties on sulfur taken in lead and zinc mining operations.

Heavy Chemicals

Month of Spotty Demand

Demand for industrial chemicals was spotty in the past month. Some industries, such as the steel, automotive, paint, varnish and lacquer took deliveries in satisfactory volume while a very noticeable decrease in demand was reported from the leading textile and dye centers. Rayon manufacture was slightly under the previous month.

Buyers appeared to be holding orders down to minimum requirements and on spot purchasing were interested only in relatively small quantities for immediate delivery. Majority of contracts were written last fall for a 6 month's period with renewal clauses. With prices firm at levels equal to those existing Jan 1, it is expected that few, if any, changes will take place.

Price changes were relatively few. Tin salts were lower as the price of the metal weakened. On the other hand, sodium antimoniate and antimony oxide prices were advanced to compensate for the rise in antimony metal.

Phosphate producers have returned to the procedure on quoting prices on a works basis, having discarded the zone basis. Schedule for di-basic material, on a works basis, freight equalized with nearest competitive points, follows:—Carloads, bags, $1.90 per 100 lbs.; bbls., $2.10 per 100 lbs. Less car lots bags, $2.35 per 100 lbs. and bbls., $2.55 per 100 lbs. For Philadelphia and New York metropolitan areas the less than carlots schedule follows:—5 bags and over, $2.40 per 100 lbs.; bbls., $2.60 per 100 lbs., and 1 to 4 bags, $2.85 per 100 lbs.; bbls., $3.05 per 100 lbs. Schedule for tri-basic:—Carloads, f.o.b. sellers' works, freight equalized with nearest competitive points, bags, $2.50 per 100 lbs.; bbls., $2.70 per 100 lbs.; 5 bags and over, $2.75 per 100 lbs.; 5 bbls. and over, $2.95 per 100 lbs.; less than 5 bags, $3 per 100 lbs.; less than 5 bbls., $3.20 per 100 lbs.

Important Price Changes

ADVANCED		
Antimony oxide	$0.08½	$0.08
Glycerine, dynamite ...	.13	.12¼
soaplye	.09	.08½
saponification	.10	.09½
Sodium antimoniate...	.09½	.09
Trisodium phosphate,		
bags	2.50	2.40
barrels	2.70	2.60
DECLINED		
Methyl acetone, 1c a gal.,	tanks,	drums
Sodium stannate	$0.34½	$0.35½
Tin crystals	.39	.40
Tin oxide	.56	.58

Briefly Noted

Grasselli's Niles, Ohio, plant has resumed operation after a 3-weeks' shutdown . . . Swedish arsenical stocks (now 100,000 tons) requires construction of further warehouse. World annual consumption, 30,000 tons—75% of which is used for animal pest preparations. Investigation of possibilities for arsenic compounds in wood impregnation and as an ingredient in certain types of concrete is under way. . . . Canadian Industries' Cornwall, Ont., alkali plant will cost $900,000 and $300,000 additional for equipment, and will be in production this fall. . . . Italian tax on crude or refined sulfer exported from Sicily or produced on the mainland has been reduced from 3.50 lire to 2.50 lire per ton. . . . Wyoming Chemicals, Inc., will develop 640-acre epsom salt tract. Incorporators, Alexander H. Willis and G. Rowen MacDougall. Offices are at Cheyenne. . . . Russia through the Inyamtorg S. A., Montevideo, is setting up a Brazilian chemical distribution company to market 10 industrial chemicals, including caustic.

Wichita (Kan.) Chamber of Commerce is reported making survey looking to the possibility of construction of a sulfuric plant to supply acid to oil companies in the vicinity. . . . Germany's oxalic export trade is showing a marked decline. . . . Industry generally is most interested in rapid expansion in cobalt supplies now becoming available from Northern Rhodesia. . . . *Chemical Trade Journal* (London) reports an I. G. representative in Japan attempting to persuade Japanese bichromate producers to enter international convention. Nihon Seiren K.K. has a monthly production of 400 metric tons and is increasing this by 50%. Paper's Yokohama correspondent believes there is little chance of Jap producers agreeing if they are to be limited to Far Eastern markets as is the case in the recent sodium cyanide pact (Oriental Soda and Japan Soda are said to have agreed to export only to Manchukuo and part of China).

Texas Gulf Sulphur recently loaded the *S. S. Tilthorn* with 10,140 gross tons in bulk at Galveston for Canadian ports. This is the largest sulfur cargo ever cleared. Previous record was 10,052 tons shipped by Texas Gulf Sulphur to Australia.

Rio Tinto Shipments

Rio Tinto chairman, Sir Auckland Geddes, reports turning point in increased use of pyrites started in '32. Rio Tinto shipped 1,139,926 tons out of European '33 total of 3,744,000 tons. '29 shipments totaled over 6,000,000 tons. Some agreement, similar to the international phosphate rock agreement, is possible, Chairman Geddes reports.

Michigan Alkali Buys

Michigan Alkali has purchased a minority interest in Natural Soda Products, Owens Lake, Inyo County, Calif.

With the Rubber Chemists

N. Y. City rubber group of the A. C. S. will hold an all-day outing on June 30 at Semler's Park, Grant City, Staten Island. Tickets ($3.50) are obtainable from Bruce Silver, N. J. Zinc. Spring meeting of the Boston group was held June 8 at the Hotel Kenmore. A series of 10-minute papers on latex were given by J. B. Crockett, Heveatex Corp.; Bradley Dewey, Dewey & Almy Chemical; Willis Gibbons, U. S. Rubber; and others.

A. C. S. Akron Rubber Group is now headed by Seiberling Rubber's C. A. Carlton. A. Brill, Republic Rubber, is vice-chairman, and H. A. Hoffman, du Pont, is secretary-treasurer....Dr. E. A. Hauser, outstanding rubber and latex authority, was severely injured recently in an automobile accident in Vienna.

Southern Newsprint

Southern Newspaper Publishers' Association adopted May 23 resolution urging establishment of a Southern newsprint manufacturing plant. Asked to comment on Major Berry's speech before the convention International President, A. R. Graustein, stated: "International paper is very much alive to the possible uses of Southern wood in paper making. . . . Major Berry's statement that a plan is contemplated to provide adequate protection not only for the manufacturers but also for the consumers is reassuring. . . ."

Cleveland-Cliffs Earnings

Cleveland-Cliffs Iron Co. and subsidiaries, for year ended Dec. 31, '33, certified by independent auditors, show profit of $105,274, after taxes, interest, depreciation, depletion, etc., but before subsidiary preferred dividend requirements. This compares with loss of $2,532,727, before subsidiary dividend requirements, in 1932. Company is controlled by the Cliffs Corp.

Fine Chemicals

Bismuth Salts Advanced

Quicksilver weakened in the past month and closed at $74.50-$77.00. Bismuth metal was reduced 10c. late in the month, the current quotation being $1.20. A number of important bismuth salts were advanced earlier in the 30 day period and the net changes are indictated. Potassium iodide was off 10c., the result of spotty conditions in the crude iodine market. Ethyl alcohol (grain) prices weakened. Glycerine, on the other hand, again skyrocketed and there was some talk of speculative influences, although in most quarters this was denied. Imported tartaric fluctuated within comparatively narrow limits, mainly because of minor foreign exchange "ups and downs." A better demand was noted for both domestic and imported. The net movement for silver nitrate for the 30 day period was a small gain in keeping with the slightly higher metal price level.

Most fine chemical producers reported May volume equal to if not better than April. Outlook for seasonal items appears to be good. Sales of citric have been slow, but a much better demand is anticipated shortly. The Department of Commerce has released Camera Agrumaria stocks statement as of March 15 as follows:

	Dec., 1933, to March 15, 1934. Kilos.
New production—	
Messina	821,237
Palermo	13,136
Reggio Calabria	475,627
Stracusa	96,288
Catania	231,896
Total	1,638,184
Old production (Dec. 1932-Nov. 1933)	3,957,444
Total	5,595,628
Sold and consigned from Dec. 1, 1933, to March 15, 1923	1,312,454
Stocks on March 15, 1934	4,283,194

Important Price Changes

ADVANCED		
Bismuth, chloride	$3.30	$3.20
citrate VIII	2.70	2.65
lactate	3.80	3.70
nitrate	1.30	1.20
oxide	3.25	3.15
trioxide	3.55	3.45
oxychloride	3.05	2.95
subbenzoate	3.35	3.25
Tannate	2.37	2.27
Glycerine, C.P.	.13½	.12½
Silver nitrate	.32⅞	.31⅞
DECLINED		
Bismuth metal	$1.20	$1.30
Mercury, flask	74.50	76.00
Potassium iodide	1.65	1.75

Cod Statistics

Cod fisheries in northern Norway became more active in March and indications are that the catch for 1st quarter of '34 will be almost up to the level of the 1st 3 months of last year. In spite of large catches, however, prices for cod livers remain firm, the report points out. Norway's exports of all grades of cod liver oil during 1st quarter totalled 1,355,400 gal. or 64,700 less than for the corresponding period of last year. U. S. is the largest purchaser of Norway's cod liver oil and took 484,461 gals. in the 1st 3 months of the current year.

Total imports of cod liver oil into the U. S. rose sharply in '33 reaching 3,432,000 gals. valued at $1,711,000, against 1,248,000 gals. valued at $804,375 for the preceding year. Notwithstanding the fall in dollar exchange the invoice value of cod liver oil imports declined from an average of 64.5c per gal. in '32 to 50c for '33. Imports during the current year continued heavy and prices have risen almost to the '32 level. While Norway is our largest source for cod liver oil, considerable quantities are imported from Canada, Iceland, Newfoundland and Germany. Domestic production of cod liver oil is small and amounted to only 20,806 gals. in '32.

French Kuhlmann Reports

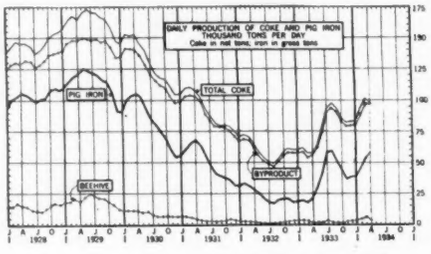
Kuhlmann reports '33 net profit of fr. 26,700,000, unchanged from '32. The 20 francs dividend was maintained.

Coal Tar Chemicals

Prices Unchanged

Toluol, solvent naphtha, xylene, phenol and benzol were in satisfactory demand last month at firm price levels. Dye intermediates and colors moved out at a slower pace, reflecting curtailment in textiles.

After 4 months of increasing activity, upward trend of coke production was halted in April, daily rate of recovery being 3% below the peak recorded for March. In spite of this decline, however, the average daily output of 98,280 tons from by-product and beehive ovens was, with the exception of March, the highest rate recorded since August, '33. Production of by-product coke for April amounted to 2,875,451 tons, or 95,848 tons per day. Compared with March the April daily rate increased 0.1%. Increase was entirely at furnace plants, where an advance of 2.2% was made; at merchant plants the rate declined 3.9%. During the month there were 83 plants which produced coke, 63 recovered ammonia or its compounds, and 53 made benzol or motor benzol. Stocks at by-product plants rose from 1,712,962 tons to 1,963,743 tons, or 14.6%, practically all of the increase occurring at merchants' plants. Stocks at the end of the month were equivalent to 20.05 days' production at the current rate.



U. S. Bureau of Mines

April output of benzol amounted to 6,410,705 gals., as compared with 6,674,000 gals. in March and 3,710,000 gals. in April last year. Production to the end of April amounted to 24,071,705 gals., as compared with 15,103,000 gals., in the same period a year ago. Light oils were recovered: 12,378,824 gals. as compared with 12,763,407 in April '33. For the 1st 4 months total was 46,503,983 gals. as against 28,976,507 in the similar period a year ago. Tar production for the 1st 4 months totaled 155,645,951 gals. as against 95,978,513 gals. in the corresponding period last year; April output was 41,431,113 gals. as compared with 42,718,342 in March and 23,567,351 in April, '33. Ammonia sulfate, or its equivalent, was recovered to the amount of 48,547 tons in April as against 50,052 tons in March and 27,664 in April last year, with the total for the 1st 4 months of the year 182,378 tons as against 112,468 in '33. Coke coal charged in the by-products ovens amounted to 4,210,479 tons in April as compared with 4,341,295 in March and 2,395,056 in April last year.

International Dyestuff Figures

Increased dyestuff production and trade indicates greater world-wide textile activity. French '33 dyestuff production totaled 10,900 metric tons against 10,150 tons in '32 and 9,200 in '31. Italian production increased from 5,700 tons in '32 to 6,200 tons in '33; Japan from 1,552 in '31 to 4,642 in '32, and 7,690 in '33. U. S. '33 synthetic dye imports totaled $4,792,000 com-

pared with $3,517,000 in preceding year.

German Dye Exports

German dye exports in 1st quarter of this year were 31,717 tons against 29,932 in same period of '33; it was the 1st upturn in such exports since the beginning of the depression. . . . Germany's share in the world's chemical industry now amounts to 27½%, compared with 25% 5 years ago. This statement was made by Professor Henglein, of the Technical Academy, of Karlsruhe, at the meeting of the Association of German Chemists at Cologne. About 10% of the total German exports, said Professor Henglein, correspond to the chemical industry, but in '33 this percentage advanced to 14, and in the current year a further increase is expected. Germany's import of chemical products is steadily decreasing, and today represents only 3% of the whole German imports. In '28, the value of the German industrial output amounted to Rm. 68,000,000,000, and the value of the farm products to Rm. 12,000,000,000. Chemical output during that year was valued at Rm. 4,000,000,000.

U. S. Dye Exports

Exports of coal-tar dyes from the U. S. during the 1st quarter of '34 totalled 5,600,468 lbs. valued at $1,605,858, compared with 4,897,570 lbs. valued at $1,082,854 in corresponding period of last year. China was the largest single market, taking 2,853,000 lbs. valued at $700,563 during 1st quarter of '34 followed by British India, with 574,656 lbs., Canada with 533,580 lbs., and Kwangtung with 392,842 lbs. Belgium, Netherlands, India, Mexico, Argentina, and Japan are other important purchasers of American dyes.

Coal tar dyes imported into the U. S. during the 1st quarter of '34 totalled 861,101 lbs., a decline of 86,811 lbs. compared with the same period of last year. Because of higher invoice prices, however, value rose from $939,095 to $1,238,058. This value increase was due in part to lower dollar exchange. Fifty-seven % of the imports during the 1st quarter originated in Germany and 41% in Switzerland. While hundreds of varieties were imported most of them were in relatively small quantities.

American coal-tar dye industry, the key industry to many manufacturing enterprises, has experienced remarkable growth during the past two decades. In '14 total domestic production was only about 7,0000,000 lbs.; in '32 it had risen to 71,269,000 lbs., while sales during that year reached $33,000,000.

U. S. Import Statistics

U. S. imports of synthetic dyes increased in April, the total being 318,658 lbs., valued at $450,634, compared with 293,674 lbs., valued at $416,387, imported in March. April imports this year exceeded those in April, '33, by 38% in volume and 97% in value. Imports in the 1st 4 months were almost the same in volume as those in the corresponding period in '33, but their value was 44.6% greater.

Imports of synthetic aromatic chemicals turned upward in April, but were 21.3% less in volume than those in April, '33. Total for the 4 months was 42.8% less than that for the '33 period. April imports of color lakes were much smaller than those in March. Imports of other coal tar chemicals increased in April, but were 8.7% less than those in the same month in '33. Imports in the 1st 4 months totaled 16.4% more than those in the '33 period.

Imports of Synthetic Dyes

	1934		1933	
	Pounds	Value	Pounds	Value
Jan.	232,078	$349,504	314,878	$311,640
Feb.	335,349	472,167	365,144	369,829
March	293,674	416,387	267,890	257,626
April	318,658	450,634	232,741	229,078
Totals	1,179,759	$1,688,692	1,180,653	$1,168,173

Countries of Origin of Dye Imports

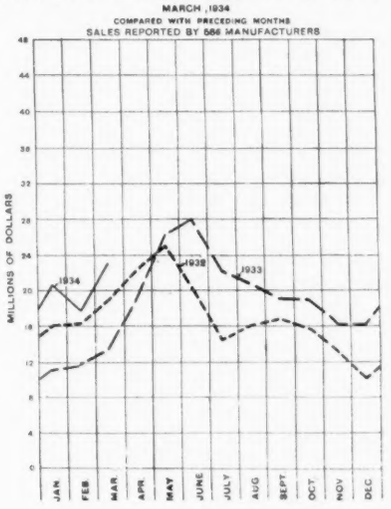
	Percentages April	
	1934	1933
Germany	52.96	62.73
Switzerland	46.03	34.25
England	1.01	2.97
All other	....	.05

Paints, Lacquers and Varnish

Increase Volume

Demand for raw paint materials was reported by most factors in the trade as fair to satisfactory. May volume compared favorably with April. Price schedules on red lead, litharge and orange mineral were entirely revamped last month as follows: The new 5-ton price is ½c. lower than the bbl. or so-called card price, which was lowered ¼c late in May, the 1st price movement since Oct. '33. Prices are to be placed on a zone basis, and meanwhile schedule for material testing up to and including 95% Pb_3O_4 is as follows:—Delivered East (New England, Middle Atlantic states and Midwest) car lots, 6½c.; 5-ton lots, 7c.; smaller lots, 7½c. Delivered Pacific Coast, car lots, 6½c.; 5-ton lots, 7¼c., and smaller lots, 7¾c. Usual differentials apply for guaranteed 97% and 98% Pb_3O_4 material.

PAINT, VARNISH & LACQUER PRODUCTS



U. S. Bureau of the Census

Important Price Changes

ADVANCED		
Blanc fixe, by-product	$65.00	$60.00
Vandyke brown	.05½	.05
DECLINED		
Casein, Argentine	$0.13¼	$0.14¼
Litharge, commercial		¼c a lb.
Orange, Mineral, all grades		¼c a lb.
Red lead		¼c a lb.

A 5-ton lot price was established for litharge at ½c. less than the so-called card price, and the latter was reduced ¼c. May 28. Prices are being set according to zone and for the present the market in the Middle Atlantic States, New England and the Midwest are as follows:—Car lots, 5½c.; 5-ton lots, 6c.; smaller lots. 6½c. Pacific Coast prices:—Car lots, 5½c.; 5-ton lots, 6¼c., and smaller lots, 6¾c.

Orange Mineral prices were revised to create a 5-ton lot quotation, which is ½c. lower than the card price. Small lot price was cut ¼c.

Argentine casein prices were cut 1c. to 1¼c. a lb. but the differential between foreign and domestic is still too wide to permit the sale of much tonnage of the former. A number of the important varnish gums were revised in price, differentials being set up in most cases between carlots and the various l.c.l. quantities.

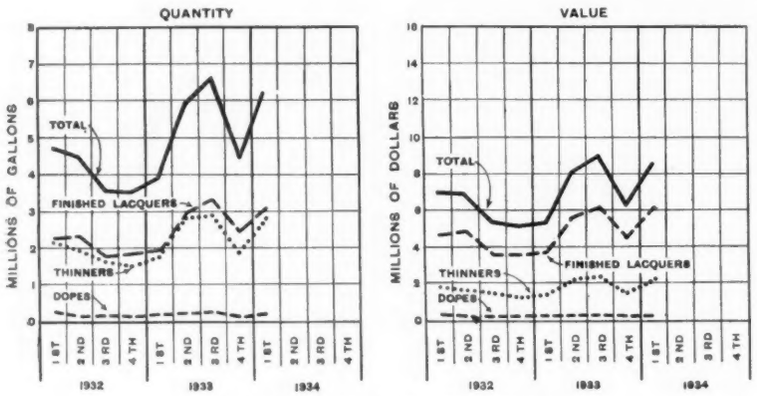
Retail and wholesale sale figures for paints, varnish and lacquers continue to show seasonal expansion with prices firm. Some slackening in lacquer demand is looked for in the automotive centers.

Paint Co. News

Jones-Dabney has increased salaries 10%—3rd raise since May 1, '33. Employment is up 100%. . . . Nuodex Products (liquid driers) has a new and larger plant at 312 Division st., Elizabeth, N. J. . . . Glidden reports April sales of $2,695,810 against $2,106,706 in April, '33. Sales in past 6 months have increased $4,022,976, or 41.3% over same period a year ago. . . . Premier Bronze Powder's Painesville, Ohio, plant was destroyed by fire May 22. Company made aluminum paint. Rebuilding plans are under way. . . . Public auction of the plant, stock and equipment of Emil Calman & Co. (paint manufacturer in L. I. City for 80 years) was held May 28.

Brush Duco Demonstrated

Use of Brush Duco in the home, as well as for refinishing automobiles, was recently demonstrated in one of the Boardwalk windows of the Du Pont Exhibit at Atlantic City. New Duco White, described as "the whitest white you ever saw," was stressed in the display. Acting as a background for the demonstration was a reproduction of a Colonial fireplace, mantel of which was finished in new Duco White. In the foreground, to the right of the window, a young lady demonstrated ease of application and made various tests as to the resistance of the new finish to hot water, extremes in temperature, hammer blows, rapid-drying qualities, and so forth. A kitchen ensemble consisting of a table and 3 chairs, which had been painted by the demonstrator, were also included in the display, together with cans of Brush Duco in assorted colors.



Sales of lacquer in the first quarter

Association Notes

Cyanamid's John McE. Sanderson and Anderson Prichard Oil's J. K. Stewart were on the program of the A. C. S. 12th Regional Meeting May 5. . . . Ill-health has forced J. S. Felton to resign as chairman, executive committee, Philadelphia Paint, Varnish & Lacquer Association. He has been elected an honorary life member and is succeeded on the committee by S. R. Matlack. . . . Anderson Prichard

Paint Personnel

E. R. Fitz Gerald is assistant to Don Gilles, General Paint, Los Angeles. . . . A. C. Horn (L. I. City lacquer producer) has appointed Arthur H. Mann, 320 S. E. Riverside ave., Evansville, Ind., general representative. . . . Gunther H. Schmidt, formerly with General Paint, is now superintendent,

Norman W. Drescher

E. A. B. Paint. . . . Norman W. Drescher, former Valentine vice-president, in charge of sales and advertising, is general sales manager for American Asphalt Paint, Chicago, and will direct sales of Chi-Enamel, Cleveland, and Water Proof Paint & Varnish, Watertown, Mass., subsidiaries. According to President Hermann, American Asphalt Paint, this is the 1st step in a program of sales and promotional expansion for '34-'35. . . . Standard Varnish has appointed Paul Sommer industrial sales manager and technical consultant. . . . Sapolin has added Augustus Wulfing, Thomas K. Ames and Bruno P. Stolz, all formerly with Emil Calman, to its staff. . . . John Lucas & Co. has appointed Charles W. Curts, advertising manager.

Krumbhaar Sails

Beck, Koller's Dr. Wilhelm Krumbhaar sailed May 9 on the *Washington*

LACQUERS FIRST QUARTERLY REPORT, 1934

Compared with preceding quarters

Quarterly statistics on sales of finished lacquer, lacquer thinners and dopes, based on data reported to the Bureau of the Census by 102 identical manufacturers, are presented in the following table:

SALES OF LACQUER

(Including sales of package goods to jobbers and dealers)

Year and Quarter	Total Sales		Finished Lacquer		Lacquer Thinners		Dopes *	
	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars
1934								
First Quarter	6,216,891	$8,562,351	3,096,347	$6,051,532	2,831,371	$2,152,620	289,173	$358,199
1933								
First Quarter	3,905,846	$5,323,315	1,916,350	$3,668,615	1,765,148	$1,401,624	224,348	$253,076
Second Quarter	5,935,608	8,044,749	2,938,643	5,561,381	2,708,268	2,152,168	288,697	331,200
Third Quarter	6,568,896	8,890,314	3,340,182	6,176,543	2,932,826	2,340,847	295,888	372,924
Fourth Quarter	4,490,940	6,229,776	2,450,501	4,424,790	1,853,974	1,577,754	186,465	227,232
Total (Year)	20,901,290	$28,488,154	10,645,676	$19,831,329	9,260,216	$7,472,393	995,398	$1,184,432
1932								
First Quarter	4,666,420	$6,947,508	2,249,069	$4,692,055	2,161,317	$1,913,937	256,034	$341,516
Second Quarter	4,475,293	6,867,544	2,337,612	4,823,513	1,968,189	1,796,301	169,492	247,730
Third Quarter	3,578,390	5,382,948	1,778,305	3,593,977	1,601,875	1,515,330	198,210	273,641
Fourth Quarter	3,532,718	5,140,226	1,836,432	3,524,739	1,499,002	1,341,175	197,284	274,312
Total (Year)	16,252,821	$24,338,226	8,201,418	$16,634,284	7,230,383	$6,566,743	821,020	$1,137,199

* Does not include base solutions used in the manufacture of lacquers.

for England and the Continent. He returns in the fall for speaking engagements—Philadelphia Club, Oct. 4, Baltimore, 5th, Montreal, 17th, Toronto, 19th, St. Louis, 30th, and N. Y. City, Dec. 20. Definite dates for other engagements have not been set.

General Plastics Will Build

General Plastics will erect a 2-story plant addition. New distributers of company's paint resins include: A. W. Paterson, 526 Roselawn ave., Toronto; Downer Hunnewell & Co., 148 State st., Boston; W. R. Grace & Co., N. Y. City; George F. Smith, Fulton Bldg., Pittsburgh; and A. L. Webb & Sons, 514 S. Eutaw st., Baltimore.

Pledges Cooperation

Synthetic Resin Manufacturers' Association, through Secretary Wittenburg, has forwarded to the N. P. V. & L. Association resolutions adopted pledging cooperation in development of products of the industry.

Reject Dry Color Code

Representatives of the Dry Color Manufacturers Association, May 2, rejected its code in protest against the elimination by Administrator Johnson of two sections of the document.

In his order of April 25 approving the code Gen. Johnson specifically eliminated from the code a section disclaiming approval by the industry of any changes or modifications which might be made, and another declaring that approval of the code could not be construed as a waiver of constitutional rights.

Trade Sales Group Meets

A meeting of the Trade Sales group of the N. P. V. & L. Association, attended by representatives from all over the country, was held at the Drake Hotel, Chicago, May 18-19. Meeting, presided over by Horace S. Felton, chairman, discussed organization's price plan picture under the code.

Automobile Color Perferences

Color Index, published by the Duco Color Advisory Service, shows by chart and figures that grey has gained rapidly and is now only second to black. Order of importance of the colors are now: black, grey, blue, green, maroon, brown.

F. C. Atwood, Boston, president of the Federation of Paint and Varnish production Clubs, has announced that the Federation will hold its annual convention in Washington, Oct. 28-30. Arrangements have been completed with the Mayflower Hotel.

Quaker City Golf Date

Philadelphia P. V. & L. Association will hold its annual outing June 20 at the Turners' Country Club, Eddington, Pa.

Beck, Koller has announced a $100,000 expansion program calling for new buildings.

Elton Goes on the "Air"

Reuel W. Elton, N. P. V. & L. Association, talked on the "Economics of Cheap Paint" over WFHR, Baltimore, on May 22.

Edward W. Keisker, 56, president, Indianapolis Paint & Color, died May 30.

Naval Stores

Marketing Quotas Adopted

AAA license for the wood rosin and turpentine branch of the naval stores industry (effective May 13) establishes a system of marketing quotas, which during the period from Apr. 2, '34, to Dec. 31, '34, shall not exceed 71,000 barrels of wood turpentine and 399,000 barrels of rosin. Quota is apportioned: 57,000 barrels of wood turpentine and 399,000 barrels of wood rosin to the processors of steam distilled wood turpentine and wood rosin and 9,000 barrels of wood turpentine to the processors of this product by the sulfate method, in which it is a by-product to the manufacture of paper and 5,000 barrels of turpentine to processors using destructive distillation. A control committee will apportion individual quotas. On Oct. 1 each year the committee will fix quotas. Membership will be divided as follows: steam distilled processors, 3 members, other 2 groups 2 members each.

New Inspection Methods

Savannah section has adopted resolutions adopting new method of inspecting rosin. To allow stave mills time change becomes effective July 1. Cooperation of Jacksonville is being asked. Method would eliminate tearing off of the head of the barrel and the spiking and loss of rosin, with resulting deterioration and claims.

Unsatisfactory?

Naval stores factors (producers) and distributers of rosin and turpentine do not in all cases take kindly to the proposal that both groups be placed under an identical code, a hearing at Savannah May 21 disclosed. Final action will be taken at a meeting scheduled for June 10 at Sea Island Beach. At the same time proposal to place daily receipts of rosin and turpentine at Savannah and Jacksonville on the open market for sale will be discussed.

Savannah Office

Control Committee has opened branch offices at Savannah in charge of John W. Blaine (1016 Realty Bldg.). Executive secretary of the committee is Carl F. Speh.

Appointed Gas Supervisor

Charles E. Stewart has been appointed to a 4-year term as supervising inspector of Georgia naval stores.

At the Chicago Fair

General Naval Stores, a wholly owned subsidiary of Newport Industries, will feature an attractive exhibit of all types of pine tree products such as turpentine, pine oils, solvents, rosins produced, at a Century of Progress, Chicago's new World Fair for 1934, Florida Hall, Court of States.

The pine distillate industry is busy in drafting a code. Representatives of all branches of the industry met in Washington late last month to discuss code provisions.

A Federal Loan

The Naval Stores Control Committee has advised processors that it is endeavoring to secure a government loan which will enable the processors to hold their surplus turpentine and rosin produced during the heavy producing season until the season of lighter production. It is rumored that the Control Committee will announce an allocation of 11%. This would be considerably less than at 1st anticipated.

Hercules Increases Rate

Hercules Powder declared a quarterly dividend of 75c on the common, payable June 25 to stock of record June 14. Three months ago company declared a dividend of 50c on the common, prior to which the company paid 37½c quarterly.

Gums, Waxes, Shellac

London Shellac Speculation

Shellac prices skyrocketed last month at a dizzy pace and the market was filled with all sorts of rumors and accusations. The London "Crusaders" were again reported as backing the sensational speculative activity and a press report from London links the names of some of America's market operators with the group. Among those mentioned were Ben Smith, Thomas Bragg and E. L. Cord. Moving spirit of the "Crusaders" is said to be John Howeson, English tin millionaire.

London stocks are said to be the largest ever known and in excess of 208,000 packages. The Indian Bysacki crop is expected to reach 175,000 packages, providing a visible supply in excess of 375,000 packages. Late in the month rumors were spread about that the Indian crop was being damaged severely. This was discounted, however, by the major factors in the trade in this country.

At a meeting June 5 at the Downtown Athletic Club, 18 West st., N. Y. City, members of the Shellac Importers Association, Inc., discussed the advisability of forming a futures market in shellac. Among those present were Julius Baer, counsel for the Commodity Exchange, Inc., and J. Chester Cuppia of E. A. Pierce & Co., acting president of the Exchange. Mr. Baer and Mr. Cuppia outlined the probable advantages and disadvantages to the shellac trade of futures trading in the commodity.

Fear Dumping

Some of the shellac dealers expressed fear that the formation of such a market would give an opportunity to the English combination to dump their holdings here. Others advocated such a market on the ground that it would greatly facilitate trading and would make possible gradual liquidation of the large English holdings which are hanging over the market. During the last year the price of shellac has more than doubled, and it is now quoted at about 118 shillings a hundredweight in London.

Six months ago, consideration was given to the establishment of a futures market in shellac on the Commodity Exchange. Although some members advocated the step, nothing came of it. At present, Jerome Lewine, president of the Exchange, is in London and is reported by brokers to be investigating the shellac situation.

Important Price Changes

ADVANCED		
Carnauba, No. 3 chalky	$0.19½	$0.19¼
DECLINED		
Candelilla	$0.13	$0.13½
Carnauba, No. 2 yellow	.31	.32
Japan	.06	.06½

New shellac prices were established as follows:—

Bonedry, one delivery, 10 or more bbls., 35c.; 5 to 9 bbls., 36c.; 1 to 4 bbls., 37s. Refined bonedry was priced 6c. higher than these bonedry prices. T. N., one delivery, 10 to 24 bags, 28c.; 1 to 9 bags, 29c. Superfine, one delivery, 10 to 24 bags, 30c; 1 to 9 bags, 31c. D. C., V. S. O., and Diamond I., one delivery, 1 to 10 cases, 37c. Garnet was 30c.

Shellac varnish, orange, 5-lb. cut, $1.45 per gal.; 4½-lb. cut, $1.38; 4-lb. cut, $1.30; White, 5-lb. cut, $1.65; 4½-lb. cut, $1.58; 5-lb. cut, $1.50. Shellac varnish in quantities ranging 200 to 300 gals., one delivery, were quoted 5c. lower than this shellac varnish schedule.

Advance in prices brought changes in sales terms. Orange shellac was placed on a one delivery basis, as against previous practice of selling on contract and making deliveries as wanted. Further previous custom of quoting a price on 25 bags or more was dropped, quotation on more than 24 bags becoming an open market price to be established by negotiation. Shellac varnish differentials as between the 3 grades offered as a lb. cut, 4½-lb. cut, and 4-lb. cut, were changed. Formerly, 4½ lb. cut cost 5c. more than 4 lb. cut, and 5 lb. cut was 10c. over 4 lb. cut. Last month, 4½ lb. cut cost 8c. more than 4 lb. cut, and 5 lb. cut cost 15c over the price for 4 lb. cut. Dealers are not selling shellac beyond Aug. 31.

Carnauba Prices Firmer

Various grades of Carnauba after a period of weakness firmed up in the closing days of the month. Distressed stocks were reported cleaned up and Brazil was said to be offering very little other than fall shipments. Other waxes were generally firm in price and in fair demand. Candelilla was off ½c the result of the spotty condition in Carnauba during most of the 30 day period. Japan was weak in the face of little interest from buyers and sizable spot stocks.

Wax Imports Rise

Heavy imports of animal and vegetable waxes since the beginning of '34 reflect increased activity in domestic production of polishes and candles. During the 1st 4 months of the current year imports of such raw materials totalled 6,750,000 lbs. valued at $1,150,000, compared with 3,872,000 lbs. valued at $409,750 for the corresponding period of '33.

Bulk of wax imports consist of carnauba from Brazil. Receipts of this amounted to 4,581,000 lbs. valued at $794,300 during 1st 4 months of the year—more than double the amount imported during the corresponding period of '33. Other wax imports include beeswax, chiefly crude unbleached, Japan wax, Chinese insect wax, and various vegetable waxes.

Animal and vegetable waxes have very wide use in industry. Largest single use is perhaps in the manufacture of polishes, furniture, floor, automobile, and the like, although substantial quantities are used by manufacturers of candles, leather dressings, medicines, toilet preparations, chewing gum, and numerous other consumer products.

Large quantities of beeswax are produced in the U. S., with every state in the Union contributing, but except for small quantities of bayberry wax, little or no vegetable waxes are produced, and these must be obtained abroad.

Russian Arabic

Die Chemische Industrie is authority for statement that, following experimental work by Prof. Tschesnokow, Archangel Technical Institute, on process of extracting gum arabic from different woods growing in Northern Russia, a plant capable of producing 200 tons a year will be erected.

Zinsser's Mueller Retires

Alfred Mueller, manager of William Zinsser & Co.'s Chicago office, and well-known in the shellac field in the middle west, retired June 1.

Persons interested in color and color schemes will find the rooms on exhibit at the Bride's House, recently opened at 444 Madison ave., N. Y. City, by *House Beautiful* combined with *Home & Field* most interesting Exhibit will be open for 3 months.

Chemical Specialties

Agricultural Insecticide Code

Code of fair competition for the agricultural insecticide and fungicide industries went into effect May 11. Provisions which called for a waiting period between the time of filing revised price lists and their effective date were deleted. Another section was substituted providing that if destructive price cutting is encountered, the code authority may determine the lowest reasonable costs at which goods may be sold and set these as minimum figures. Besides these sections other trade practices included in the code outlaw free goods, except to government experiment stations; commercial bribery; secret rebates or allowances; lotteries, fraud or misrepresentation in selling; guarantee against price decline; sales on consignment, except patented phytonomic oils; sales through brokers except on 1% commission. All packages must comply to interstate commerce regulations, and must be marked in accordance with the Federal insecticide act.

Association Meets

Agricultural Insecticide and Fungicide Association met at Haddon Hall, Atlantic City, May 14, to elect a code authority. Nominees for the 10 posts on this group were: sulfur group, D. E. Demmon, Stauffer Chemical; nicotine representative, G. F. Leonard, Tobacco Bi-Products and Chemical; pyrethrum-rotenone representative, G. R. Rinke, John Powell & Co.; southern group, J. Hal Boyd, Commercial Chemical ; Pacific group, Robert K. Vickery, California Spray Chemical; east and mid-west group, J. B. Cary, Niagara Sprayer and Chemical; R. N. Chipman, Chipman Chemical Co.; D. E. Connolly, Ansbacher-Siegle; H. P. Mansfield, Grasselli Chemical., and G. E. Riches, Bowker Chemical.

Spceialty Co. Briefs

Morton Salt is opening 1st promotional advertising invasion of N. Y. City in 86 years. . . . Reilly Tar & Chemical, Indianapolis, has opened up a nationwide sales drive for its "re-Nap" moth balls and flakes. . . . DuPont and its subsidiary, Grasselli, have "dolled up" several of their specialties with new attractive containers. "Before and after" (pages 12 and 13) May *Du Pont Magazine* shows some striking dress changes. . . . Marine Laboratories (water treatment and water treatment materials, also chemical specialties) has combined offices and plant at 45 Commerce st., Brooklyn, N. Y.

Barrett has "dressed up" its packaged ball and flake naphthalene. Both are available in striking red, white and blue 16-oz. and 12-oz. packages, 48 to a carton (see this month's roto). . . . Naphthole, Inc., N. Y. City (detergents) has placed its advertising with F. J. Low Co., N. Y. City. . . . Cyrus Ward & Co. is now publishing "Rotenone News." Those desiring can secure future issues from the Company's N. Y. City offices, 305 E. 47th st., by mentioning CHEMICAL INDUSTRIES.

Chemical specialties are going on the air in greater numbers. Enoz Chemical, "Enoz" moth-spray is on WENR Chicago; Sinclair's "P. D." will also put on a weekly broadcast. Both companies are using supplementary booklets. . . . Stanco is increasing space this year for "Flit" advertising. With a brand new can Company expects a large sale increase. . . . "Black Flag" will feature Frank Buck on the radio who will tell how he protected his jungle expedition with his sponsor's product. . . . Eaton Wax, Buffalo, (floor and furniture polishes) has placed its advertising with Moss-Chase, Buffalo agency. . . . W-B Chemical is now located at 521 5th ave., N. Y. City.

Soap Code Authority Meets

A meeting of the Code Authority of the Soap and Glycerine Manufacturing Industry was held May 17 at the offices of the Association of American Soap and Glycerine Producers. This is the 1st meeting of the Code Authority since March 7. At the meeting, questions which have been submitted by the industry since the last meeting, were taken up and interpretations issued. After these have been passed upon by the NRA in Washington, the complete interpretations will be published as official decisions of the Administration.

Insecticide Group at Chicago

Mid-year meeting of the National Association of Insecticide & Disinfectant Manufacturers scheduled for the Edgewater Beach Hotel, Chicago, June 13, will attract large numbers, advance reservations indicate. On the program: J. H. Lawson, Federal Varnish, "Growing Importance of Floor Maintenance"; Homer J. Buckley, B. Dement Co., Chicago, "Direct Mail Advertising"; George C. O'Brien, Hercules Powder, "What the Raw Material Producer Can Do To Increase Sale of Finished Products"; J. C. Bennett, Wilson & Bennett Mfg. Co., "Containers as Related to Sales"; P. C. Magnus, Magnus, Mabee & Reynard, "Perfume Odors and Sales"; and Dr. Foster D. Snell, "The Advantages of Closer Cooperation Between Research and Selling." Hercules Powder has become an active member. Sherwood Petroleum (pyrethrum products) is another new member.

Code For Automotive Specialties

NRA Deputy Administrator Battley conducted a hearing June 4 in Washington on a code offered by the Automotive Chemical Specialties Manufacturers' Association, claiming to represent 66 2/3 of the members and 86% of the volume of the industry.

Proposed code would establish a maximum work-week of 40 hours, averaged over any 3 months' period, with exemptions for technical and managerial employees receiving $35 or more per week, outside salesmen and employees engaged on emergency maintenance or repair work. Engineers, firemen, water tenders and oilers would be permitted to work 48 hours per week. Minimum wage would be set at 40c per hour for factory workers except those engaged in light packaging and wrapping operations, who would be paid not less than at the rate of 35c per hour. All other employees, except commission salesmen, would be paid not less than at the rate of $15 per week.

Soap Jottings

J. B. Williams (shaving soaps) declared a 25c extra on the common. . . . P. & G. has advanced prices approximately 5%. Unless the cocoanut oil tax is repealed further mark-up is inevitable.

Specialty Co. Personnel

Samuel J. Caplan, formerly chief chemist, Apex Soap & Sanitary, Pittsburgh, is now researching for The Gerson-Stewart Corp., Cleveland. . . . Charles Galinari, sales manager for A. S. Boyle, floor wax, died in Cincinnati following an appendix operation.

Opens Research Laboratory

Wilson & Bennett Mfg. Co. with offices and factories in Chicago, Jersey City, and New Orleans, has established a chemical research dept. for the benefit of users and prospective users of steel containers. This department will work with shippers and marketers in perfecting the proper interior coatings or protective linings for the shipment of all products in their modern line of steel containers. Many spe-

Hydroquinone C. P.

OTHER EASTMAN CHEMICALS:

Cellulose Acetate
Gallic Acid
Nitrocellulose Solutions
Pyrogallic Acid
Silver Nitrate

•

Research Organic Chemicals

For use in Photography, Dye Manufacture Medicine, Analysis, Research

The uniformly high quality of Eastman Hydroquinone C. P. is a result of many years of experience in its manufacture. Rigid standards of purity necessary for photographic materials assure users in all fields of a product which meets their every requirement.

Constant photographic demands for Eastman Hydroquinone C. P. permit fresh stocks for all shipments—it is readily available at all times in large or small quantities.

Information and samples will be furnished upon request. Eastman Kodak Company, *Chemical Sales Division*, Rochester, New York.

NRA

EASTMAN TESTED CHEMICALS

Church & Dwight, Inc.

Established 1846

80 MAIDEN LANE NEW YORK

Bicarbonate of Soda

Sal Soda

Monohydrate of Soda

Standard Quality

cial interior coatings have already been developed, that provide positive protection for certain products. These protect contents from contamination and from any reaction to the container.

Company offers the cooperation of their chemical research dept., without cost or obligation, in developing the proper container and lining. They also offer the services of their creative art department in originating and adapting sales producing labels for these steel packages.

Container News

Atlas Plywood (plywood boxes, barrels for chemical, drug and food industries) is opening a plant at Toledo. . . . American Can is showing a complete line at the Chicago Exposition. Wackman Welded Ware, St. Louis, has introduced a newly designed steel drum. An outside locking device (a ring) prevents contamination of contents and makes the drum shock, tamper and leak proof. Sealing or opening the rim is helped by use of a vertical action lever. Drum is very easy to clean.

Novel Product

Expello Corp., Dover, N. H., is introducing "Elf Cleaner"—a sponge rubber holder containing cleaning powder, and when wet, powder is converted to a paste and comes through a porous side of the surface rubber. It is said to be useful for household work and extremely economical.

Personal

George M. Armour, McCormick & Co. vice-president, has been relieved of his duties as NRA industrial advisor and is back in Baltimore offices. . . . Isaac H. Brown, 72, Denver Dearborn Chemical district manager, died recently.

P. O. Changes Regulation

Post Office admits to mails insecticides, fungicides, and germicides not outwardly or of their own force hazardous. Regulations still forbid acids and other corrosive substances. Special packing rules for admissible articles are available.

New Container

"Suds-a-Lot"—a detergent, has been given a new dress by Designer Arsina Hauk, N. Y. City. Package has a unique patented pouring device that is bound to prove a sales aid.

* U. S. Circuit Court of Appeals, 2nd Circuit, modifying the decree of the district court, found, June 8, that Singmaster was entitled to 38 of the 40 patents. Decision will be given in detail in the next issue.

Textile Chemicals

The Result of Drought

Corn dextrins were advanced 20c. per 100 lbs. last month. New schedule is as follows: British gum, car lots, bags, f.o.b. Chicago, $3.75; l.c.l., $3.95; corn $3.70, white, c.l.,f.o.b., Chicago, $3.45; l.c.l., $3.65. The upward price revision was due, of course, to the higher prices for grain the result of the drought. Starch prices were also advanced. Corn pearl, bags, $2.91 to $3.01, according to quantity, powdered, $3.01 to $3.21. Zinc dust prices were off slightly as the metal lost ground. Natural dyestuffs and tanstuffs prices were firm and generally unchanged from April quotations.

With the Rayon Companies

Samuel Courtauld, chairman, Courtauld, Ltd., arriving recently on the *Europa*, reported he suspected industry slightly over-produced in this country. . . . Following reduction of 10c a lb. in viscose rayon by Viscose, largest manufacture of rayon, a price reduction of 3 to 10c was reported made in acetate rayon by Celanese. Twenty-four hours later du Pont Rayon announced still lower prices on acetate rayon. . . . Effective Aug 1. substantial freight rate reductions will be made in l.c.l. shipments of cotton and rayon piece goods moving between points located in the territory east of the Mississippi and north of the Ohio and Potomac rivers.

American Glanzstoff is now North American Rayon. . . . Du Pont Rayon posted a 8% increase for 4,000 at Nashville on May 10. . . . Viscose's 9% wage increase has ended strike threats. . . . Tubize Chatillon has granted licenses for use of its pigment delustering process to American Bemberg, American Enka, North American Rayon. Industrial Rayon, Du Pont Rayon, and Delaware Rayon were previously licensed. Process developed by James A. Singmaster was contested by N. J. Zinc, company claiming idea originated with Chemist Singmaster while in its employ. Tubize Chatillon was also a defendant and after a decision in the Federal Court in N. Y. City in favor of the zinc company Tubize purchased rights to the process. (See CHEMICAL MARKETS, Apr., '33, p. 340; also May, '33, p. 437.)*

Geigy Releases Card

Geigy Co., selling agents for J. R. Geigy, Basle, has completed a color card No. 876, which displays the principal fashion shades for woolen cloth.

Important Price Changes

ADVANCED		
Dextrin, corn	$3.50	$3.30
British gum	3.75	3.55
Starch, corn	2.91	2.71
powdered	3.01	2.81
DECLINED		
Gambier, plant	$0.08⅞	$0.09¼
Wattle bark	30.00	30.50

Less Consumption Likely

Chemical consumption in the textile field is likely to show sharp recessions as a result of an NRA sanctioned cut in production. Beginning June 4 cotton textile industry limited use of its productive machinery to 75% of the present maximum hours for an emergency period of 12 weeks. Industry which has been operating machinery for 80 hours a week, will be limited to 60 hours. Exceptions were made for the rayon industry which was put on a loom-hour basis and the synthetic yarn staples industry which is to have an 8 week's curtailment. This action follows closely on the heels of a week's silk curtailment.

Cotton vs. Rayon

Committee of mercerizers of cotton yarns and a group of rayon yarn producers met in Washington May 25 to discuss with NRA officials claims of the processors that their increased costs under the cotton code have placed them in an unfavorable competitive position with rayon. Fall in market for mercerized yarns is shown in the following table:

Year	Pounds	Average price 60s 2-ply
1928	74,000,000	85c
1929	82,000,000	86c
1930	63,000,000	77c
1931	50,000,000	64c
1932	46,000,000	50c
1933*	22,000,000	50c

* Jan. 1 to July 1.

During the same period rayon yarn production increased from a total of approximately 100,000,000 lbs. in '28 to more than 200,000,000 in '33, mercerizers emphasize.

Zell With Nyanza

P. C. Zell has been appointed Philadelphia branch manager of Nyanza Color & Chemical. Mr. Zell spent over 15 years in China with Chemische Greisheim-Electron. He has been in charge of the Piedmont section for Nyanza since '30.

PHENOBARBITAL . . .
like snow on the hills

MALLINCKRODT Phenobarbital is as pure a phenylethylbarbituric acid as is manufactured today. Tests prove that it exceeds the purity requirements of the U.S.P.

Mallinckrodt Phenobarbital is pure white. It is marketed in two forms: a fine powder, and as small lustrous crystals, both of which dissolve in ether or alcohol to give a clear solution without residue.

Phenobarbital Sodium N.N.R. manufactured by the Mallinckrodt Chemical Works dissolves in alcohol or water without residue, which indicates the absence of harmful impurities.

Send for a sample and try this simple test—

dissolve a few grains of Phenobarbital or Phenobarbital Sodium in a small quantity of alcohol. Then note the sparkling appearance of the solution.

Mallinckrodt Phenobarbital and Phenobarbital Sodium sent to pharmaceutical and hospital users mean reorders.

OTHER MALLINCKRODT HYPNOTICS AND SEDATIVES—

Ammonium Bromide
Calcium Bromide
Chloral Hydrate
Lithium Bromide
Paraldehyde
Potassium Bromide
Sodium Bromide
Strontium Bromide
Sulphon-Methane
Sulphon-Ethyl-Methane

Mallinckrodt

CHEMICAL WORKS

Makers of over 1500 Fine Chemicals

St. Louis . . Chicago . . Philadelphia . . New York
Toronto . . Montreal

Acetamide
CH_3CONH_2

"A NOTABLE NEW SOLVENT"

Stabilizer - Plasticizer - Extracting Agent

Tech. U. S. P. C. P.

Odorless - Neutral - White Cryst.-Diel. Const. 59.2

Solvent for: Dyes, Salts, Esters, Carbohydrates, Hydrocarbons, Cellulose Esters, Halogen Derivatives, Hydroxyl Compounds, Carbocyclic Compounds, Ammonium Nitrogen Derivatives.

●

Kilfoam - FOR INSTANT REDUCTION OF PROCESS FOAMS

Sebacic Acid $C_{10}H_{22}O_2$-Dibasic

Fatty Acid Used in Resins, Plasticizers and Cosmetics

"AMECCO" Chemicals

American Chemical Products Co.
Manufacturers of Fine Chemicals
7 Litchfield Street — Rochester, N. Y.

R. W. Greeff & Co., Inc.
10 EAST 40th STREET :: NEW YORK CITY

Methyl Ethyl Ketone
Methyl Propyl Ketone

●

Secondary Amyl Alcohol
Secondary Amyl Acetate
Secondary Butyl Alcohol
Secondary Butyl Acetate

●

Tertiary Butyl Alcohol

Manufactured by

Shell Chemical Company
SAN FRANCISCO

Oils and Fats

Troublesome Coconut Tax

President Roosevelt asked Congress, May 28, to reconsider the excise tax on coconut oil, on the ground that this provision of the General Revenue Act violated the "spirit and intent" of the Philippines Independence Act.

Message was referred to the Ways and Means Committee and to the Senate Finance Committee. The 1st reaction of committee members was that the message came too late for action, and predictions were that the matter would die in committee.

The coconut oil tax of 3c a lb. was adopted after the Senate had reduced a House proposal of 5c a lb. No record vote on the tax was taken in the House. During Senate debate Senator Clark introduced an amendement to strike the tax from the Revenue Bill. This suggestion was thrown out by a vote of 64 to 7.

Even if the committees should succeed in getting the President's recommendations to the floor, it was considered doubtful that enough Senators and Representatives would change their minds, even under Presidential urging, to put through a corrective measure.

The coconut oil tax was backed by the agricultural votes in both branches. (CHEMICAL INDUSTRIES, April, '34, p. 354.) It was contended that importations of the coconut oil from the Philippines competed with the home-produced fats and oils, which are subject to a processing tax, in most cases, under the AAA. The excise was intended to equalize the market situation for coconut oil.

President Roosevelt listed 3 reasons for asking Congress to reconsider the tax, "in order that the subject may be studied further between now and next January." They were:

Withdrawal of an offer made by the Congress to the people of the Philippines; 2nd, enforcement will produce a serious condition among thousands of families in the Philippines; 3rd, no effort has been made to work out a compromise which would be less unjust to the Philippine people. The President pointed out that the Independence Bill provided that 448,000,000 lbs. of coconut oil could be imported annually, duty free, from the Philippines.

1st Quarter Production

Factory production of fats and oils during 1st quarter of the current year included 370,718,774 lbs. of refined cottonseed oil, 2,476,085 lbs. of refined peanut oil, 76,143,309 lbs. of refined coconut oil, 36,722,014 lbs. of refined corn oil, 474,884 lbs. of refined soybean oil, 97,451,809 lbs. of linseed oil and 11,452,363 lbs. of castor oil.

Imports of oils included 2,933,277 lbs. of sunflower, 22,954,269 lbs. of tung, 104,190,268 lbs. of coconut, 56,882,959 lbs. of palm, 4,841,347 lbs. of sulphur, 2,149,950 lbs. of rapeseed, 7,824,482 lbs. of perilla, and 573,475 lbs. of linseed. Seed imports included 118,897 tons of flaxseed, 11,933 tons of castor beans and 523 tons of rapeseed.

Exemption in Fish Oils

Bill to exempt fish oils from the 3c excise tax imposed by the Revenue Bill of '34 has been introduced by Rep. Ellenbogen in the House. Bill (9722) reads: To amend Revenue Act of 1934 by exempting fish oil from the tax of 3c per lb. when used in the manufacture of paint, linoleum, oil-cloth and other protective coatings.

Tung Oil Importations

U. S. March tung oil imports (Hankow) totaled 6,324,000 lbs. which compares with 6,008,000 lbs. in February and 1,694,000 lbs. for March, '33. First quarter figures—15,696,000 lbs. compared with 19,328,000 lbs. in same period a year ago. Hankow stocks Mar. 31—1,470 short tons.

Linseed Makers Meet

National Linseed Oil Manufacturers' Committee met in Chicago May 15 and, it is reported, discussed trading rules governing purchase and sales of linseed oil and meal.

Cottonseed Products

	On hand August 1	Produced Aug. 1 to April 30	Shipped out Aug. 1 to April 30	On hand April 30
Crude oil, pounds—				
1933-1934	*51,269,417	1,202,732,380	1,153,088,837	*109,290,421
1932-1933	29,523,581	1,266,483,703	1,198,272,570	123,958,554
Refined oil, pounds—				
1933-1934	†676,331,574	‡1,033,297,237	.....	†844,033,050
1932-1933	628,420,148	1,038,120,993	.....	804,131,590
Cake and meal, tons—				
1933-1934	160,874	1,750,490	1,659,350	252,014
1932-1933	114,656	1,840,994	1,735,685	219,965
Hulls, tons—				
1933-1934	76,686	1,026,164	1,033,045	69,805
1932-1933	162,773	1,153,144	1,220,619	95,298
Linters, running bales—				
1933-1934	70,786	735,442	664,539	141,689
1932-1933	235,521	644,267	626,858	252,930
Hull fiber, 500-lb. bales—				
1933-1934	985	36,823	35,212	2,596
1932-1933	4,138	16,277	8,202	12,213
Grabbots, motes, etc., 500-lb.bales—				
1933-1934	3,216	34,878	31,185	6,909
1932-1933	15,250	22,386	23,040	14,596

* Includes 4,274,646 and 11,526,315 pounds held by refining and manufacturing establishments and 14,320,860 and 15,446,652 pounds in transit to refiners and consumers August 1, 1933, and April 30, 1934, respectively.

† Includes 5,498,953 and 6,154,869 pounds held by refiners, brokers, agents, and warehousemen at places other than refineries and manufacturing establishments, and 12,642,917 and 991,565 pounds in transit to manufacturers of lard substitute, oleomargarine, soap, etc., August 1, 1933, and April 30, 1934, respectively.

‡ Produced from 1,122,539,657 pounds of crude oil.

Exports for Eight Months Ended March 31

	1934	1933
Oil, crude ..... pounds	13,315,833	30,659,637
Oil, refined ..... pounds	4,944,706	5,840,884
Cake and meal ..... tons of 2,000 pounds	72,271	139,335
Linters ..... running bales	116,144	109,488

Metals and Alloys

Secretary of State Hull is backing plan to accept tin exports in partial exchange for war debts....Governors of the N. Y. Commodity Exchange have approved lead and zinc future trading. Members will vote on the proposition shortly, and those sponsoring idea hope to start trading July 1. Both metals will be traded in 20 ton units....Senator Wheeler (Mont.) conferred with the President May 11 on manganese industry in his state....Following out an extensive and continuous research program in the world's principal tin using countries, The International Tin Research and Development Council has announced definite plans for carrying on this work in the U. S. Work will be done at the Battelle Memorial Institute, Columbus, Ohio.

Within 64 years the world will be without sufficient ore, Dr. Frowein of Ludwigshafen, Germany, recently told a convention of German chemists.... Code for the lead industry (442 in the series) was approved by Gen. Johnson May 25.

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Fertilizers

Lower Potash Prices

Fertilizer materials market passed through a very quiet and uneventful 30 day period in May. Buying was light. Superphosphate manufacturers have extended prices to Sept. 30. First hands on sulfate continued to quote $25, but resellers were said to be offering material at $23.50. Trading in nitrate was slow with prices unchanged.

On June 1 American Potash & Chemical announced prices. Muriate for delivery between June 1, '34 and Dec. 31, '34 (95-98%KCL) for agricultural purposes, will be 50c per unit (20 lbs. K_2O) in bulk, c.i.f. principal continental U. S. ports, subject to discounts, terms and conditions as follows: There will be an additional charge of $2.50 per net ton of salts for material packed in bags of 100 lbs. On orders placed under contract before July 16, '34 for delivery prior to Dec. 31, '34, a discount of 12% will be allowed, provided the customer takes delivery of not less than 50% of the total tonnage so ordered before Oct. 1, '34. Based on the average run of salts (61% K_2O) this corresponds to ton prices of $30.50 list, $26.84 net after 12% discount.

If customer takes delivery of less than 50% of the total order prior to Oct. 1, the discount of 12% will apply on further deliveries equal in amount only to the smaller tonnage so taken, and a discount of 6% will apply on additional deliveries necessary to complete the order by Dec. 31. On orders placed under contract after July 15 and prior to Oct. 1, for delivery on or before Dec. 31, a discount of 6% will be allowed. Above discounts apply on material purchased by the customer for his own use. If discounts have been allowed to buyer on material subsequently resold to other fertilizer producers or dealers, such discounts shall be repaid to seller. Price of purchases made since May 1, 1934 by those buyers who later sign contracts will be adjusted on the basis of price and discounts available under contract. For delivery during the period ending Sept. 30, shipping instructions must be given before Aug. 1, and for the period ending Dec. 31 they must be given before Oct. 16.

New price constitutes a reduction of approximately 26% below corresponding '33 figure and is approximately 18½% below the interim announcement made by the company May 1, '34.

Present indications point to the possibility of a $35 a ton price for sulfate of potash less 12% discount and $22.50 a ton less 12% for surfate of potash magnesia, but no announcement has come as yet from the importers, although one is expected shortly. None of the other domestic potash producers, aside from American Potash & Chemical, have issued price announcements as yet.

Plenty of Competition

International potash market will shortly have to contend with greater competition on the part of Spanish producers, as the 3 companies exploiting this industry in Spain, viz., Union Espagnola de Explosivos, Potasas Ibericas, and the Minas de Potasa de Suria, are proceeding with their program of expansion on foreign markets. First-named of these companies has now reached a daily output of 1,300 to 1,400 tons, while the other 2 produce about 200 tons per day. Recent estimates have shown that potash reserves in Catalonia amount to about 2,000,000,000 tons. At the same time as pushing exports Spain is trying to reduce imports, and the depreciation of the peseta has been very favorable to such a policy. Exports of potash from Spain have increased from 25,000 tons in '31 to 150,000 tons in '33, Holland alone taking 70,000 tons of the latter.

It is reported from Amsterdam that a trial order for Russian potash was placed recently by a Netherlands firm, and that a shipment of 450 metric tons of Russian potash was recently dispatched to Japan via Amsterdam. It was stated in Netherlands' papers that the Solikamsk mines produced 120,000 tons of salts in '31, and were scheduled to produce 800,000 tons in '33.

I. F. M. A. Elects

Independent Fertilizer Manufacturers' Association has elected as president, C. T. Melvin, Gulf Fertilizer vice-president; Ernest S. Davis, secretary and treasurer. Mr. Davis is president, Rogers & Hubbard, Middletown, Conn. Wood Crady, vice-president, Federal Chemical, is Association vice-president. A successor to J. S. Whittington, who resigned as executive secretary to join F. W. Berk & Co., will be chosen shortly. American Potash & Chemical (J. Russel Porter and William Murphy) was host to the group for one evening.

Greater Employment

Fertilizer Code Authority reports March employment 89% and payrolls 108% greater than for March, '33. Report concludes: "while 1st 6 months' operation of the code has not been 100% efficient," its operation has been successful "in carrying out the main purposes of the code."

Armour Personnel

Armour Fertilizer reports several personnel changes. William J. Gray has been elected vice-president with offices at Atlanta. G. T. Cunningham and C. C. Arledge have been appointed assistant sales managers. John C. Bennett is in charge at Porto Rico. Mr. Gray has worked his way up through the Armour organization, and since '23 has been eastern manager with N. Y. City headquarters. Mr. Cunningham joined the staff in '10 and Mr. Arledge in '20. Since '27 he has been stationed in Porto Rico. Mr. Bennett who goes to that island has been assistant manager at Baltimore.

TVA Activities

TVA Chairman, Dr. Arthur E. Morgan, in his report to the President, indicates that the authority is utilizing the nitrate properties and is adding materially to the plant in the conduct of experiments seeking processes for cheaper production and distribution of plant food. Program may also require preparation of phosphates, as part of the manufacturing process, to be at the phosphate beds. It is also felt that a continuation of this research, together with a demonstration of possible economy in actual production, distribution, and use on a commercial scale, is desirable.

Phosphate Rock Agreement

Die Chemische Industrie reports under terms of recent international phosphate rock agreement American exporters are to receive a 16% quota in Europan trade, while French North Africa mines are to receive a minimum annual market in Europe of 3,000,000 tons.

Del-Mar-Va June 30

The Del-Mar-Va Fertilizer Association will hold its annual convention at the George Washington Hotel, Ocean City, Md., on June 30.

Personal Notes

G. W. Harris, president, Potash Co. of America, has returned to his home in Denver after spending several weeks at company's offices in Baltimore.

J. C. Pridmore is now with Barrett's agricultural development bureau, Columbia, S. C.

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Foreign Fertilizer Statistics

For the month of April imports of fertilizer and fertilizer materials were 75% larger than the imports for April, '33, and were almost 3 times as large as the imports for April, '32, according to reports summarized by the N.F.A., from preliminary reports of the U. S. Dept. of Commerce. Exports were 41% larger than for April, '33, and 37% larger than the exports for '32.

Greatest gains in the imports for April over April, '33 were shown in the receipts of calcium nitrate, sodium nitrate, superphosphate, 20% kainite, sulfate of potash, sulfate of potash magnesia, and muriate of potash. Imports of sodium nitrate totaled 80,466 tons compared with only 66 tons imported during April, '33, and 2,675 tons imported during April, '32. In April, '31, imports of sodium nitrate totaled 67008 tons. Exports of practically every material on the list were larger than the exports for April, '33. Largest gains were shown in the exports of "other nitrogenous chemicals" chiefly domestic synthetic sodium nitrate, ammonium sulfate, high grade hard rock, superphosphate, and potash fertilizers.

For the 1st 4 months of '45 imports were 60% larger than for the 1st 4 months of '33 and were 94% larger than the 1st 4 months of '32, but were slightly smaller than the imports for the 1st 4 months of '31. Most pronounced increases were in sodium nitrate, calcium cyanamid, calcium nitrate, muriate of potash, 20% kainite, sulfate of potash, and sulfate of potash magnesia.

Exports of fertilizer and fertilizer materials for the 1st 4 months of '34 were 43% larger than the exports for the 1st 4 months of '33, and were 19% larger than 1st 4 months of '32. Largest gains in the exports were shown in the shipments of "other nitrogenous chemicals," chiefly domestic synthetic sodium nitrate, ammonium sulfate, high grade hard rock, land pebble rock, superphosphate, other phosphate materials, potash fertilizers, and concentrated chemical fertilizers. Phosphate rock exports were slightly larger than the exports for the 1st 4 months of '33, and for the 1st 4 months of '32, but were considerably below the exports for the 1st 4 months of '31. Shipments of superphosphate, totaling almost 10,000 tons for the 1st 4 months of '34, compared with shipments of 2,113 tons for the 1st 4 months of '33, and 5,628 tons for the 1st 4 months of '32. For the 1st 4 months of '31 the exports of superphosphate totaled almost 29,000 tons. Potash fertilizer exports for the 1st 4 months of the present year totaled 10,861 tons against 6,631 tons for the 1st 4 months of '33 and less than 100 tons for the 1st 4 months of '32. During the 1st 4 months of '31 exports of potash fertilizers totaled almost 14,000 tons. See detailed statistics.

April Fertilizer Tag Sales

	Equivalent tons *							
	April				January-April			
	P.C. of 1933	1934	1933	1932	P.C. of 1933	1934	1933	1932
South—								
Virginia†	91	60,528	66,625	61,504	110	209,384	190,644	175,839
North Carolina	57	245,528	432,781	314,419	98	754,336	771,657	575,843
South Carolina	54	106,601	199,212	161,500	106	516,310	487,887	402,698
Georgia	103	95,073	92,369	138,766	156	530,301	340,320	348,798
Florida†	159	33,610	21,092	16,060	123	155,883	126,606	139,377
Alabama	93	122,050	131,550	98,850	141	339,100	240,300	198,100
Mississippi	105	40,180	38,400	35,500	201	147,535	73,395	79,400
Tennessee†	109	30,373	27,940	19,068	124	61,181	49,433	40,394
Arkansas‡	98	9,800	9,960	5,350	212	39,120	18,435	14,950
Louisiana†	120	13,353	11,090	7,800	157	53,711	34,107	31,654
Texas†	110	6,450	5,855	6,400	182	47,230	26,008	28,618
Oklahoma	250	250	100	205	243	4,675	1,925	2,875
Totals, South	74	763,796	1,036,974	865,422	121	2,858,766	2,360,717	2,038,546
Midwest—								
Indiana	330	20,156	6,109	12,281	258	57,625	22,322	34,418
Illinois	37	1,959	5,322	2,191	114	12,266	10,765	12,319
Kentucky	130	18,485	14,188	10,440	125	42,695	34,137	42,795
Missouri	231	3,231	1,399	3,035	264	16,067	6,088	13,895
Kansas	32	35	110	120	278	785	282	1,385
Totals, Midwest	162	43,866	27,128	28,067	176	129,438	73,594	104,812
Grand totals	76	807,662	1,064,102	893,489	123	2,988,204	2,434,311	2,143,358

* Monthly records of fertilizer tax tags are kept by State control officials and are slightly larger or smaller than the actual sales of fertilizer. The figures indicate the equivalent number of short tons of fertilizer represented by the tax tags purchased and required by law to be attached to each bag of fertilizer sold in the various States.

† Cottonseed meal sold as fertilizer included.

‡ Excludes 19,950 tons of cottonseed meal for January-April combined, but no separation is available for the amount of meal used as fertilizer from that used as feed.

United States Imports and Exports of Fertilizer and Fertilizer Materials By Classes—Total for All Countries—Long Tons

(Summarized by The Nat'l. Fertilizer Assn. from Dept. of Commerce Preliminary Reports)

IMPORTS**

	April			January-April		
	1934**	1933	1932	1934**	1933	1932
Ammonium sulphate	18,137	47,129	25,399	111,022	169,605	88,448
Ammonium-sulphate-nitrate	0	0	0	0	0	75
Calcium cyanamide	11,094	9,841	7,647	48,109	35,162	27,505
Calcium nitrate	7,577	1,452	95	22,401	9,969	3,679
Guano	25	3,107	25	261	10,242	3,258
Dried blood	561	417	272	1,458	959	2,217
Sodium nitrate	80,466	66	2,675	206,083	3,093	44,270
Urea and calurea	519	648	114	2,618	2,583	1,896
Ammonium phosphates	1,344	180	*	3,836	391	*
Tankage	1,660	1,146	1,748	3,768	5,384	7,619
Castor pumace	1,268	*	*	3,318	*	*
Other nitrogenous material	10,955	6,948	4,422	44,802	15,902	9,688
Total Nitrogenous Materials	133,706	70,934	42,397	447,676	253,290	188,653
Bone phosphates	1,182	1,935	2,109	5,717	10,187	13,639
Superphosphates	2,949	1,931	2,883	6,511	7,148	8,900
Phosphate rock	0	0	0	0	2,100	6,300
All other phosphates	27	68	466	27	808	1,727
Total Phosphate Materials	4,158	3,934	5,458	12,255	20,243	30,566
Muriate of potash	8,802	3,751	2,914	45,126	21,399	18,635
Kainite, 14%	2,324	4,959	2,325	14,124	15,076	29,375
Kainite, 20%	11,101	0	‡	46,437	3,616	‡
Manure salts, 30%	5,451	9,104	4,626	39,440	31,922	45,372
Sulphate of potash	3,231	1,800	571	13,186	8,042	6,671
Sulphate of pot. magnesia	3,980	449	*	11,404	1,881	*
Nitrate of patash	867	390	*	5,881	3,062	*
Other potash	89	84	65	126	290	256
Total Potash Materials	35,845	20,537	10,501	175,724	85,288	100,309
Nit-phos-& pot. fertilizers	18	40	30	875	1,151	743
Other fertilizers	4,703	6,759	3,047	10,853	24,301	13,528
Grand Total	178,430	102,204	61,433	647,383	384,273	333,799

EXPORTS

Ammonium sulfate	3,311	313	563	6,405	1,035	12,463
Other nitrogenous chemicals†	13,524	3,223	8,822	68,758	26,956	50,988
Nitrogenous organic waste	1,208	703	1,678	4,785	2,405	2,669
Total Nitrogenous Materials	18,043	4,239	11,063	79,948	30,396	66,120
High grade hard rock	12,580	3,563	8,903	33,755	11,008	35,349
Land pebble rock	53,392	59,827	48,095	243,656	217,631	213,319
Total Phosphate Rock	65,972	63,390	56,998	277,411	228,639	248,668
Superphosphates	8,168	164	2,442	9,944	2,113	5,628
Other phosphate materials	147	67	102	2,825	315	570
Total Phosphate Materials	74,287	63,621	59,542	290,180	231,067	254,866
Potash fertilizers	4,300	1,382	40	10,861	6,631	96
Concentrated chem. fertilizers	1,458	281	820	5,767	2,836	3,485
Prepared fertilizer mixtures	206	57	149	558	207	385
Grand Total	98,294	69,580	71,614	387,314	271,137	324,952

* Not previously stated separately. ‡ Included in kainite, 14%. † Chiefly domestic synthetic sodium nitrate. **The *Import* figure for 1934 represents the imports entered for consumption plus withdrawals from warehouses for consumption.

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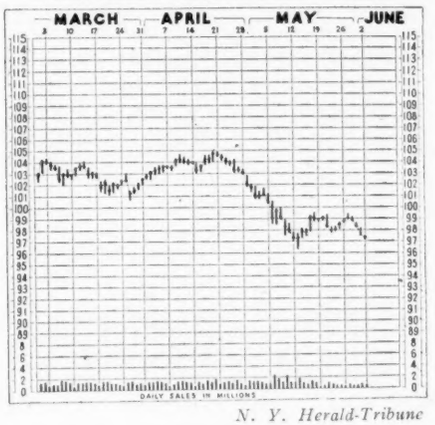
The Financial Markets

Stock Prices Sag

Trading in May was in the smallest volume experienced for several years. In fact, it is necessary to go back 10 years to find a comparable period of inactivity. Even the professional element was largely out of the market. Prices sagged in the face of so little interest. News of the month (droughts and serious labor disorders) was extremely bearish and contributed to the depressed feeling caused by the almost certain passage of the Fletcher-Rayburn Control Measure (passed late in the month).

Daily Record of Stock Market Trend



N. Y. Herald-Tribune

The net loss in values on the N. Y. Stock Exchange amounted to $2,615,630,186. Loss in the chemical group totaled $220,190,159 in May. The total value of the chemical group on June 1 amounted to $3,421,268,888 compared with $3,641,459,047 on May 1. Chemical stocks were no exception and as the statistical data below indicates, all of the leading chemical issues lost ground.

One outstanding feature of the chemical group was the number of important companies increasing the dividend rates, including du Pont, Carbide, Pittsburgh Plate Glass, and and Hercules Powder. Interest is now centering in 2nd quarter earnings statements. In most cases it is expected that they will show up well in comparison with 1st quarter. With traditional "summer dullness" fully anticipated in the 3rd quarter, earnings in the July-Sept. period will quite likely show some declines.

Dividend Changes

Eastman Kodak is now on a $4 basis, against $3 previously....Compressed Industrial Gases has declared a **50c dividend** payable June 15 to stock of record May 31. Former distribution was 35c paid Mar. 15....Pittsburgh Plate Glass has raised dividend rate on $25 par value common to 35c against 25c paid Apr. 2....Du Pont has declared a 65c dividend on the common, placing the stock on a $2.60 basis as against $2 previously....Union Carbide has raised dividend rate from 25c to 35c.

Foreign Markets

London	Mar. 29	April 30	May 31
British Celanese	14s ½d	12s 9d	11s 9d
Celanese	£7⅛	£5¾	£4¾
Courtaulds	53s 7½d	52s 7½d	49s 1½d
Distillers	88s 9d	91s 9d	89s 6d
I. C. I.	37s 1½d	36s 10½d	34s 7½d
Unilever, ord.	23s 1½d	23s 6d	22s 7½d
Un. Molasses	25s 3d	24s	.....
Paris			
Kuhlmann	531	611	...
L'Air Liquide	686	780	760
Berlin			
I. G. Farben	142	138	136
Milan			
Snia Viscosa	233	222¾	217½
Montecatini	148½	138¼	134½

* Last trading day of month.

Over the Counter Prices

	Mar. 30*		Apr. 30		May 31	
Am. Dry Ice	5	9½	4¼	5⅜	..	..
Am. Hard Rubber	8	10½	8	10½	8	11
Canadian Celanese, com.	18½	18½	20½	20½	20¼	22½
Canadian Celanese, pfd.	115	118¼	114	117	114½	118½
Dixon Crucible	50	54	57½	62	50	55½
Merck, pfd.	121	126	122½	126½	121½	125½
Tubize Chat., 7%, cum. pfd.	60½	65½	60¼	65	..	..
Worcester Salt	49	53	49	53	..	..
Young, J. S., pfd.	86	..	89	..	89½	..
Young, J. S. com.	66	..	65¾	..	69½	..
Int'l Salt 5's, '51	97	99½	..	..	..	..

* Last trading day of month.

Price Trend of Chemical Company Stocks

	Close Apr. 30	May 5	May 12	May 19	May 26	May 31	Net Gain or Loss	1934 High	1934 Low	1933 High	1933 Low
Allied Chem.	144	143¾	135	134	132	133	—11	160¾	126½	152	70¾
Air Reduction	99⅜	101¾	98	96⅞	93¼	92¾	— 6⅝	106¼	92¾	112	47½
Anaconda	15½	15⅝	13¾	15	14½	13¾	— 1¾	17¾	13	22⅞	5
Col. Carbon	70	71	63½	64¾	66½	65¾	— 4¼	77¼	58	71½	23⅛
Com. Solvents	25¾	24	20¾	23	22¾	22⅜	— 3⅜	36¾	19¾	57¾	9
du Pont	92	90⅛	83⅛	83¾	85	84⅝	— 7⅛	103⅞	80	96⅜	32⅛
Mathieson	33½	32⅛	29⅛	30	29½	30⅛	— 3⅜	40¾	28	46⅝	14
Monsanto	46*	44	41½	44	43¾	43	— 3	46½	39	83	25
Std. of N. J.	44⅝	44¼	42⅛	42⅝	42¼	42⅞	— 1¾	50⅛	41⅛	47½	22¾
Texas Gulf S.	34⅞	34½	32	33⅞	33⅜	34½	— ⅜	43¼	30½	45¼	15¼
U. S. I.	50⅝	49	41¾	40¾	39½	40	—10⅝	64¾	37	94	13½

* New Stock.

Dow Calls

Dow Chemical Co. is calling for payment Aug. 1 next $500,000 of its 6% gold notes due Feb. 1, 1940 at 101 and interest. Company retired $500,000 of the notes on Feb. 1 and is well ahead of its schedule in retirement of this issue, which originally totaled $3,500,000, and now is outstanding in the amount of $2,115,000.

Dividends and Dates

Name	Div.	Stock Record	Payable
Abbott Labs.	$0.50	June 18	July 2
Abbott Labs. (ext)	.15	June 18	July 2
Allied Chemical	$1.50	Apr. 11	May 1
Alum Co of Am pf	.37½	June 15	July 1
Archer - Daniels - Mid. pf.	$1.75	Apr. 20	May 1
Archer - Daniels - Mid.	.25	May 21	June 1
Atlas Powder pf	$1.50	Apr. 20	May 1
Atlas Powder	.50	May 31	June 11
Celanese, 7% pt pf acc.	$1.00	May 18	June 1
Colgate - Palm. - Peet pf.	$1.50	June 9	July 1
Columbian Carbon	.75	May 15	June 1
Com. Solvents	.30	June 1	June 30
Dow Chemical	.50	May 1	May 15
Dow Chemical pf	$1.75	May 1	May 15
Du Pont, deb.	$1.50	July 10	July 25
Du Pont, com.	.65	May 31	June 15
Eastman Kodak pf	$1.50	June 5	July 2
Eastman Kodak.	$1.00	June 5	July 2
Freeport Texas pf	$1.50	Apr. 13	May 1
Freeport Texas pf	$1.50	July 12	Aug. 1
Freeport Texas.	.50	May 15	June 1
Hercules Powder pf	$1.75	May 4	May 15
Heyden Chemical	.25	May 28	June 1
Ind. Rayon (new)	.42	June 18	July 1
Int'l Nickel	.10	May 31	June 30
Int'l Nickel, pf.	$1.75	Apr. 3	May 1
Int'l Salt	.37½	June 15	July 2
Koppers Gas & Coke pf.	$1.50	June 10	July 2
Liquid Carbonic	.25	Apr. 16	May 1
Mathieson Alkali pf	$1.75	June 11	July 2
Mathieson Alkali	.37½	June 11	July 2
Monsanto Chemical	.25	May 25	June 15
National Carbon pf	$2.00	Apr. 20	May 1
National Lead, pf B	$1.50	Apr. 20	May 1
National Lead, pf A	$1.75	June 1	June 15
National Lead.	$1.25	June 15	June 30
National Lead pf B	$1.50	July 20	Aug. 1
N. J. Zinc	.50	Apr. 20	May 10
Patterson - Sargent	.12½	May 15	June 1
Penick & Ford.	.50	June 1	June 15
Pittsburgh Plate Glass	.35	June 9	July 2
Procter & Gamble	.37½	Apr. 25	May 15
Procter & Gamble 5%	$1.25	May 25	June 15
Sherwin & Williams	.50	Apr. 30	May 15
Sherwin & Williams, pf.	$1.50	May 15	June 1
Solvay Amer. Invest. pf.	$1.37½	Apr. 16	May 15
Spencer Kellogg	.30	June 15	June 30
Texas Gulf Sulphur	.50	June 1	June 15
Union Carbide & Carb.	.35	June 1	July 2
United Carbon, pf.	$3.50	June 16	July 1
United Dyewood, pf	$1.75	June 15	July 2
Vulcan Detinning pf.	$1.75	July 10	July 20
Vulcan Detinning pf.	$1.75	Oct. 10	Oct. 20
Westvaco Chlorine	.10	May 15	June 1
Will & Baumer.	.10	May 1	May 15

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The Industry's Securities

1934 May Last	1934 May High	1934 May Low	1933 High	1933 Low	1932 High	1932 Low	Sales	Stocks	Par $	Shares Listed	An. Rate	Earnings $-per share-$ 1933	Earnings $-per share-$ 1932
May 31							Number of Shares						
NEW YORK STOCK EXCHANGE													
94	106¼	92¾	112	47½	63½	30⅞	103,600	28,600	Air Reduction	No	841,288	$3.00*	3.79	2.73
133	160¾	126½	152	70¾	88¼	42½	170,000	69,500	Allied Chem. & Dye	No	2,214,099	6.00	5.50	3.62
127½	129¼	122⅛	125	115	120†	96½	5,900	1,200	7% cum. pfd.	100	345,540	7.00	42.24	29.12
33	36	25¼	35	7¼	15½	3½	141,200	30,900	Amer. Agric. Alcohol	100	315,701	None	...	—p3.86
33⅜	62½	33	89⅞	13	27	11	392,600	45,400	Amer. Com. Alcohol	20	260,716	None	4.56	3.01
29½	34	26¼	29¼	9¾	15½	7	54,800	11,100	Archer-Dan-Midland	No	541,546	1.00	1.82	q1.44
45	55½	35¼	39⅛	9	25½	7	54,600	8,100	Atlas Powder Co.	No	234,235	2.00	.74	—2.06
100	101½	83	83⅛	60	79½	45½	4,010	710	6% cum. pfd.	100	88,781	6.00	8.38	.47
24	44⅞	23⅝	58⅞	4½	12⅝	1¼	752,300	114,000	Celanese Corp. Amer.	No	987,800	None	3.32	— .95
13¼	18⅛	9⅜	22⅜	7	31½	10¼	516,400	56,700	Colgate-Palm.-Peet	No	1,985,812	None	— .57	— .74
85	92	68½	88	49	95	65	6,600	1,000	6% pfd.	100	254,500	6.00	1.51	.21
65¾	77¼	58	71½	23⅛	41⅞	13½	199,900	45,300	Columbian Carbon	No	538,154	2.00	2.17	1.83
22⅜	36¾	19¾	57¼	9	13¾	3½	1,938,900	214,200	Commer. Solvents	No	2,635,371	.60	.88	.51
67	84½	60½	90⅜	45⅜	55⅜	24¾	179,600	33,400	Corn Products	25	2,530,000	3.00	3.87	2.77
144	144	135	145¾	117½	140	99½	4,500	500	7% cum. pfd.	100	243,739	7.00	46.02	35.05
46¼	55⅛	29	33⅞	10	16¾	7	57,900	6,600	Devoe & Rayn. A	No	95,000	h1.00	3.82	—r1.00
84⅝	103⅞	80	95⅞	32⅛	59¾	22	899,500	156,900	DuPont de Nemours	20	10,871,997	i2.00	2.93	1.81
122½	122½	115	117	97½	105⅛	80¾	28,300	5,900	6% cum. deb.	100	1,092,699	6.00	35.58	24.00
96⅛	96½	79	89¾	46	87¾	35¼	121,800	20,800	Eastman Kodak	No	2,250,921	3.00	4.76	2.52
138	138	120	130	110	125	99	1,380	230	6% cum. pfd.	100	61,657	6.00	180.34	98.27
39½	50⅜	35	49⅜	16⅛	28⅝	10	158,900	26,600	Freeport Texas	10	784,664	2.00	3.01	2.75
135	160⅞	135	160⅞	97	...	...	1,700	100	6% conv. pfd.	100	25,000	6.00	156.73	...
25½	28⅜	15⅝	20	3¾	10⅜	3⅛	615,500	58,100	Glidden Co.	No	603,304	1.00	1.54	—s.06
101	103	83	91½	48	76	35	7,205	1,070	Glidden, 6% pfd.	100	63,044	7.00	22.60	7.85
88	96¾	86	85⅞	65	...	...	25,400	3,300	Hazel Atlas	25	434,409	5.00	6.22	4.68
65	75	59	68⅝	15	29½	13⅞	42,200	5,000	Hercules Powder	No	582,679	2.00	2.79	.24
122	122	111	110⅛	85	95	70½	2,740	1,020	7% cum. pfd.	100	105,765	7.00	22.38	8.39
23	32⅛	22⅛	85	24	40	7⅛	471,200	42,500	Industrial Rayon	No	600,000	...	3.01	.55
3	6⅛	2	5⅞	⅞	3½	¼	192,100	14,800	Intern. Agricul.	No	436,049	None	—4.04	—q4.47
24	37¼	15	23½	5	15	3¾	25,000	2,000	7% cum. pr. pfd.	100	100,000	None	...	...
25⅞	29¼	21	23¼	6¾	12½	3½	2,008,100	332,500	Intern. Nickel	No	14,584,025	None	.53	— .14
28½	30½	21	27¾	13¾	23½	9¾	25,800	1,000	Intern. Salt	No	240,000	1.50	2.04	2.14
19½	24½	15¾	22	7½	11	8	34,500	2,800	Kellogg (Spencer)	No	500,000	1.00	.98	—v.26
30⅞	43⅞	27⅜	37⅜	4⅜	9⅜	3¾	617,200	64,600	Libbey Owens Ford	No	2,559,042	1.20	1.64	— .13
28¾	35⅜	25¾	50	10¼	22	9	178,400	35,500	Liquid Carbonic	No	342,406	1.00	v1.05	—u129
30⅛	40⅜	28	46⅝	14	20⅞	9	346,800	32,900	Mathieson Alkali	No	t650,436	1.50	1.70	.86
43	47½	37½	83	25	30¾	13⅜	100,800	12,800	Monsanto Chem.	10	854,000	...	2.57	1.18
140¼	160½	135	140	43¼	92	45	15,300	2,300	National Lead	100	309,831	5.00	6.98	3.15
145	147	122	128¼	101	125	87	2,200	200	7% cum. "A" pfd.	100	243,676	7.00	18.35	13.55
110	110	100⅛	109⅛	75	105	61	1,300	300	6% cum. "B" pfd.	100	103,277	6.00	30.45	15.45
9	13	6	11¾	1⅜	3¾	1½	113,100	8,300	Newport Industries	1	519,347	None	.05	— .68
74	94	73½	96¾	31½	42¼	12	83,200	8,600	Owens-Illinois Glass	25	1,200,000	3.00	4.86	1.62
33⅜	41¼	33½	47½	19⅝	42¾	19⅞	159,100	25,200	Procter & Gamber	No	6,410,000	1.50	1.52	q1.26
109¼	110	102½	110¾	97	103½	81	3,675	920	5% pfd. (ser. 2-1-29)	100	171,569	5.00	61.95	52.16
4⅝	6¾	4⅛	7¼	1⅜	4⅜	1	67,000	8,200	Tenn. Corp.	5	857,896	None	...	— .89
34½	43¼	30½	45¼	15¼	26¾	12	365,500	29,600	Texas Gulf Sulphur	No	2,540,000	2.00	2.93	2.33
39⅝	50⅞	35⅞	51⅞	19¾	36⅜	15½	630,300	84,900	Union Carbide & Carbon	No	9,000,743	1.00	1.59	.98
41½	45¾	35	37¾	10¼	18	6⅝	138,000	27,700	United Carbon	No	370,127	1.60	1.39	— .05
40	64¾	37	94	13½	36¼	13¼	223,500	31,400	U. S. Indus. Alco.	No	391,033	None	3.56	.47
19	31¾	18	36¼	7⅝	23¾	5¼	424,000	33,200	Vanadium Corp.-Amer.	No	366,637	None	—2.40	—4.36
3¼	5⅜	2⅝	7⅜	⅝	2⅜	½	185,900	11,000	Virginia-Caro. Chem.	No	486,000	None	—4.93	—q5.73
17¼	26	14½	26½	3⅜	11¼	3⅛	45,800	3,100	6% cum. pact. pfd.	100	213,392	None	...	...
70	78	59¾	63½	35⅜	69¾	20	2,500	400	7% cum. prior pfd.	100	60,000	None	...	...
18⅜	27¼	14⅞	20½	5	12⅝	3	99,300	7,700	Westvaco Chlorine	No	284,962	.40	1.08	.79
NEW YORK CURB EXCHANGE														
17¾	22½	15⅛	16½	3¼	8½	1⅝	411,200	95,000	Amer. Cyanamid "B"	No	2,404,194	m1.00	.99	.14
2⅞	4⅛	2⅞	4½	1	2⅛	¾	25,800	2,300	British Celanese Am. R.C.R.	243	.....	None	...	...
92	103¼	93½	110	27	55	8	7,725	1,300	Celanese, 7% cum. 1st pfd.	100	144,379	7.00	32.24	.60
90½	98½	83	90	51	64¼	17	3,400	475	7% cum. prior pfd.	100	113,668	7.00	47.98	7.77
8	19	8	26⅞	2	5⅜	1½	14,400	1,600	Celluloid Corp.	15	194,952	None	—1.00	—3.79
11¾	12¾	10½	11⅝	4⅛	6⅞	4½	15,000	3,100	Courtaulds' Ltd.	1£	24,000,000	4½%	...	...
90	92¾	69¼	78	30	39	21½	22,200	5,400	Dow Chemical	No	630,000	2.00	1.99	2.95
8¾	10¼	4	8	½	1½	¼	44,600	12,600	Duval Texas Sulphur	No	500,000	None	z.17	z.30
32¾	37	19	19	8	...	...	8,300	2,100	Heyden Chem. Corp.	10	147,600	1.00	2.68	1.23
48½	57½	39	39⅞	13	19½	12⅛	82,125	8,550	Pittsburgh Plate Glass	25	2,141,305	1.00	1.87	— .03
66	70¼	47¼	47	12⅞	35	17½	76,015	1,325	Sherwin Williams	25	635,583	2.00	y3.54	— .44
105	107¾	100	99	80	100⅜	75	1,340	300	6% pfd. AA. cum.	100	155,521	6.00	y20.78	4.52
CLEVELAND STOCK EXCHANGE														
90	92½	70½	78	30	40	21½	6,390	680	Dow Chemical	No	630,000	2.00	1.99	f2.95
PHILADELPHIA STOCK EXCHANGE														
...	61¼	56	57	25¼	40	19⅞	1,075	200	Pennsylvania Salt	50	150,000	3.00	2.17	2.42

1934 May Last	1934 May High	1934 May Low	1933 High	1933 Low	1932 High	1932 Low	Sales	Bonds	Date Due	Int. %	Int. Period	Out-standing $
May 31												
NEW YORK STOCK EXCHANGE												
101½	103¼	93½	95	70½	80	62	798,000	73,000	Amer. Cyan. deb. 5s	1942	5	A. O. 4,411,000
96	99	83⅞	89	64	80	54¼	2,625,000	375,000	Amer. I. G. Chem. Conv. 5½'s	1949	5½	M. N. 29,929,000
11¼	17¾	5	14⅛	2⅛	18	1	2,212,000	159,000	Anglo Chilean s. f. deb. 7's	1945	7	M. N. 12,700,000
75	88	61½	74⅞	37	60	34½	306,000	33,000	By-Products Coke Corp. 1st 5½'s "A"	1945	5½	M. N. 4,932,000
78¾	79	62	65	38½	54⅞	32	171,000	69,000	Int. Agric. Corp. 1st. Coll. tr. stpd. to 1942	1942	5	M. N. 5,994,100
13⅜	19	5⅛	14⅞	2½	15¼	¼	7,967,00	809,000	Lautaro Nitrate conv. b's	1954	6	J. J. 31,357,000
91	98½	91	99⅛	87	97¾	67	379,000	33,000	Montecatini Min & Agric. det. 7's with war.	1937	7	J. J. 7,075,045
...	74	52½	62	33¾	59	17	382,000	.....	Ruhr Chem. 6's	1948	6	A. O. 3,156,000
87⅛	88¼	65½	76	50	66	39	107,000	40,000	Tenn. Corp. deb. 6's "B"	1944	6	M. S. 3,007,900
78½	89½	62	81	34¾	75	30	974,000	126,000	Vanadium Corp. conv. 5's	1941	5	A. O. 4,261,000
NEW YORK CURB EXCHANGE												
103¼	104	101⅜	103½	101	103⅛	99	55,000	8,000	Westvaco Chlorine Prod. 5½'s	1937	5½	M. S. 1,393,000

* Plus 75c extra; † Years ended 5-31-32-& 33; h Plus 25c ended 5-31-32-&33; i Plus 75c ended 5-31-32-& 33; j Plus 75c ended 5-31-32-& 33; k Plus 75c ended 5-31-32-& 33; m If rate of last quarter be cont.; p Year ended 6-30-32; q Years ended 6-30-32 & 6-30-33; r Year ended 11-30-32; s Years ended 10-31-32 & 33; t Before issue, rights; u Year ended 9-30-32; v Years ended 9-2-32 & 33; x Years ended 5-31-32 & 33; y Year ended 8-31-33; z Year ended 8-13-32.

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Domestic

Caustic Potash

Flake • Solid • Liquid

JOSEPH TURNER & CO.

500 Fifth Avenue, New York, N. Y. 36 Exchange Place, Providence, R. I.

The Trend of Prices

Seasonal Recession

Retail trade continued to show advances in May. In other directions, however, definite signs were noticeable of a recession in business. Whether such trend is greater or less than the usual seasonal let-up it is difficult to determine. Two particularly bad situations have developed in the past 30 days, one, the unusual devastating drought covering the midwestern portion of the country, and the other, further spread of labor troubles and threats of nation-wide labor tie-ups in the textile and steel industries. Added to these is a growing unrest on the part of business executives with the results obtained through the NRA in many fields. The almost certain passage of the Wagner Labor Bill (unsatisfactory now to both sides, labor insisting that the "teeth" of the measure have been pulled in the final draft and industrial leaders equally insistent that it is still far too drastic) and also the extreme likelihood that the Fletcher-Rayburn Exchange control measure will get through the last minute Congressional jam, plus the passage of the Reciprocal Tariff Bill leaves a grave amount of uncertainty in the minds of business executives at the moment. There is a feeling, however, that with the adjournment of Congress close at hand, that business will make a "turn-about-face" in the next few weeks.

Accumulating textile surpluses have been met by a temporary decrease in manufacturing activity. This is likely, however, to precipitate labor troubles. In the closing days of May steel activity reached a new '34 high of 57.4%. Buying has declined in many quarters and the continuance of such a high rate of activity is due, it is suspected, from fear of possible labor strikes. For the first time in many months the glass industry reported in May receding activity. Automotive producers are thought to have turned out 300,000 or more units in May, thereby closely approximating April figures, but some slackening in sales and a weakening in the price structure are unfavorable factors.

Seasonal advances are reported from the paint and varnish fields. Some curtailment of operations is reported from the tanning industry. Tire production has been high due to the demand for original equipment and replacement sales are in satisfactory volume. The future outlook is, of course, tied up intimately with the trend in automobile sales, and, at the moment producers are hopeful for a continuance of present volume. Petroleum refinery operations remain at high levels and are likely to remain so for several months. Carloadings and sales of electrical power continue to show a healthy rate of increase over the same period a year ago. *The N. Y. Times* Index of Business activity showed a net decline for the past month.

Month's Business Statistics

	April 1934	*April 1933*	*March 1934*	*March 1933*	*February 1934*	*February 1933*
Auto production	360,620	180,713	336,013	118,002	235,384	106,888
Bldg. contracts*‡	$131,413	$56,573	$178,346	$59,958	$96,716	$52,712
Failures, Dun & Bradstreet	1,052	1,921	1,102	1,948	1,049	2,378
Merchandise imports‡	$146,517	$88,412	$158,000	$132,938	$125,292	$83,743
Merchandise exports‡	$179,444	$105,217	$190,000	$108,015	$162,805	$101,515
Newsprint Production						
Canada, tons	216,507	147,759	210,129	137,078	174,447	125,916
U. S., tons	83,652	74,507	84,933	76,566	72,402	67,085
Newfoundland, tons	25,311	19,048	24,778	21,381	22,038	17,474
Total tons	327,086	242,493	321,187	236,503	270,358	211,301
Newsprint Shipments						
Canada, tons	220,573	161,266	207,197	140,694	169,054	120,916
U. S., tons	86,209	76,095	87,987	77,857	69,251	67,057
Total (U.S. & Canada)	306,782	237,361	295,184	218,551	238,305	187,973
Plate glass production, sq. ft.	.....	.....	9,926,850	4,881,322	7,441,278	.....
Shoe production, pairs	.....	27,630,000	.....	.....	29,675,596	26,384,000
Steel ingots	2,935,631	1,362,856	2,797,194	909,886	2,224,698	1,086,867
Steel activity, % of capacity	54.19	25.08	47.81	.....	42.53	.....
U. S. consumption crude rubber	44,947	25,928	47,097	18,047	40,609	21,638
Tire shipments	.....	.....	4,222,962	2,091,878	3,285,013	2,292,463
Tire production	.....	.....	5,180,122	2,037,899	4,335,092	2,339,373
Tire inventory	.....	.....	11,650,661	7,289,976	10,725,032	7,376,946
Textile Statistics						
Cotton consumption, bales	512,703	470,359	543,690	495,183	477,890	441,203
Cotton spinning spindles oper.	26,450,750	23,416,680	26,503,876	23,488,143	26,355,498	.....
Wool consumption (grease equival.)	29,888,763	28,700,676	36,118,703	24,943,251	34,348,185	.....
Indices of textile fiber consumption						
Textile group [a]	90 p	85	94	76	91	83
Cotton consumption [a]	97	91	97	86	95	87
Wool consumption [a]	68	66	71	48	72	70
Silk deliveries [a]	115	132	129	111	114	95
Rayon deliveries [b]	277	376	324	190	371	257
U. S. galosine use, bbls.‡	.....	.....	29,733	28,227	24,947	23,312
Gasoline production, bbls.‡	.....	.....	33,355	32,362	30,750	28,307
Crude oil stocks, bbls.‡	.....	.....	354,000	341,708	351,641	.....
Refined oil stocks, bbls.‡	.....	.....	232,821	247,840	238,333	.....
Payroll totals†	.....	.....	63.3	36.9	60.6	40.2
Factory employment†	.....	.....	76.9	56.6	77.7	61.1
Dept. of Labor						
Chem. price index†	78.6	79.5	79.0	79.3	78.8	79.0
Fert. price index†	68.7	62.9	69.5	61.9	69.2	61.5
Mixed fert. price index†	72.7	60.0	72.6	60.1	72.5	62.4
Chemical Employment						
Dept. of Labor						
Chem. emp.†	110.8	72.7	107.7	73.7	104.8	.....
fert. emp.†	181.5	148.1	160.4	85.0	121.5	.....
Paints & varnish emp.†	102.6	76.4	98.4	74.1	97.6	.....
Rayon emp.†	319.0	223.7	321.9	238.4	325.2	.....
Soap emp.†	104.5	81.8	103.1	81.6	98.0	.....
Turpentine & rosin†	101.2	63.5	101.4	67.5	98.6	.....
Chemical payrolls†	.....	.....	.....	.....	.....	.....
Dept. of Labor						
Chemical†	95.8	58.5	89.1	59.3	88.0	.....
Fertilizer†	132.1	84.5	107.3	51.7	81.6	.....
Paint & varnish†	83.0	56.5	77.1	50.3	74.5	.....
Petroleum refinery†	92.0	78.6	92.0	79.5	90.8	.....
Rayon†	221.3	130.6	218.2	144.9	220.0	.....
Soap†	88.8	67.1	88.4	66.8	83.5	.....
Turpentine & Rosin†	53.7	26.4	46.2	28.9	51.7	.....
Chemicals & Related Products						
Exports‡	$7,840	.....	$8,848	$6,617	$6,676	.....
Imports‡	$8,509	.....	$7,366	$4,230	$4,230	.....

* 37 states, F. W. Dodge Corp; ‡ 000 omitted; † Dept. of Labor, 3-year average 1923-1925=100.0. This represents a change for previously these indices were based on 1926=100; [a] Fed. Res. Board Indices, adjusted for seasonal variation; [b] Textile Organon Index, actual deliveries index; p preliminary.

Weekly Business Statistics

Week Ending	*Carloadings 1934*	*Carloadings 1933*	*Carloadings % Inc.*	*Electrical Output 1934**	*Electrical Output 1933**	*Electrical Output % Inc.*	*Jour. of Com. Price Index*	*National Fertilizer Association Indices — Fats & Oils*	*Chem. & Drugs*	*Mixed Fert.*	*Fert. Mat.*	*All Groups*	*Labor Dept. Chem. & Drug Price Index*	*% Steel Activity*	*Fisher's Index Purch. Power*	*N. Y. Time Indexs Bus. Act.*
April 28	608,654	538,809	13.0	1,668,564	1,427,960	16.8	74.6	79.8	50.2	93.0	76.1	66.7	70.8	75.3	55.7	136.8	88.7
May 5	604,205	527,118	14.6	1,632,766	1,435,707	13.7	74.9	84.4	50.3	93.0	76.1	65.5	71.2	75.3	56.9	135.1	87.3
May 12	601,739	534,806	12.5	1,643,433	1,468,035	11.9	74.9	84.4	49.6	93.0	76.1	64.3	71.5	75.3	56.6	13.30	86.6
May 19	611,142	535,719	14.1	1,649,770	1,483,000	11.2	75.4	84.4	49.4	93.2	76.6	64.7	71.7	75.4	54.2	132.6	85.4
May 26	624,567	545,551	14.5	1,654,903	1,493,923	10.8	75.8	84.1	49.0	93.2	76.6	64.7	71.4	75.3	56.1	132.4	84.9
June 2	578,541	512,974	12.8	1,575,828	1,461,488	7.8	76.2	83.9	50.2	93.2	76.6	65.9	72.0	...	...	132.0	...

*kwh., 000 omitted.

Prices Current

Heavy Chemicals, Coaltar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f. o. b. works are specified as such. Import chemicals are so designated. Resale stocks when a market factor are quoted in addition to makers' prices and indicated "second hands."

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both. Containers named are the original packages most commonly used.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1933 Average $1.56 - Jan. 1934 $1.37 - May 1934 $1.33

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Acetaldehyde, drs 1c-1 wks..lb.	...	.16	.21	.18½	.21
drums, c-l, wks.....lb.	...	.14	.16½	...	...
Acetaldol, 50 gal dr.....lb.	.27	.31	.27	.31	.27	.31
Acetamide .....lb.	.38	.43	.40	1.35	.95	1.35
Acetanilid, tech, 150 lb bbl..lb.	...	.26	...	.26	...	.26
Acetic Anhydride, 92-95%, 100 lb cbys.....lb.	.21	.25	.21	.25	.21	.25
Acetin, tech drums.....lb.	.30	.32	.30	.32	.30	.32
Acetone, tanks.....lb.	...	.10	...	.10	.08	.10
Acetone Oil, bbls NY....gal.	1.15	.25	1.15	.25	1.15	1.25
Acetyl Chloride, 100 lb cby..lb.	.55	.68	.55	.68	.55	.68
Acetylene Tetrachloride (see tetrachlorethane)						
Acids						
Acid Abietic	.06¾	.07	.06	.07	.06	.12
Acetic, 28% 400 lb. bbls c-l wks .....100 lb.	...	2.91	...	2.91	2.65	2.91
Glacial, bbl c-l wk..100 lb.	...	10.02	...	10.02	9.14	10.02
Adipic	.72	.72	.72	.72	.72	.72
Anthranilic, refd, bbls.....lb.	.85	.95	.85	.95	.85	.95
Technical, bbls.....lb.	.65	.70	.65	.70	.65	.70
Battery, cbys .....100 lb.	1.60	2.25	1.60	2.25	1.60	2.25
Benzoic, tech, 100 lb bbls..lb.	.40	.45	.40	.45	.35	.45
Boric, powd, 250 lb bbls...lb.	.0425	.05	.0425	.05	.0425	.05
Broenner's, bbls.....lb.	1.20	1.25	1.20	1.25	1.20	1.25
Butyric, 100½ basis cbys..lb.	.80	.85	.80	.85	.80	.85
Camphoric .....lb.	...	5.25	...	5.25	...	5.25
Chlorosulfonic, 1500 lb drums wks. .....lb.	.04½	.05½	.04½	.05½	.04½	.05½
Chromic, 99¾%, drs....lb.	.13½	.15½	.13½	.15½	.11½	.14¾
Chromotropic, 300 lb bbls..lb.	1.00	1.06	1.00	1.06	1.00	1.06
Citric, USP, crystals, 230 lb. bbls. .....lb.	.28	.29	.28	.30	.29	.30
Cleve's, 250 lb bbls.....lb.	.52	.54	.52	.54	.52	.54
Cresylic, 95%, dark drs N Y .....gal.	...	.55	.50	.55	.38	.50
97-99%, pale drs NY..gal.	...	.60	.55	.60	.40	.55
Formic, tech 90%, 140 lb. cby .....lb.	.11	.13	.11	.13	.10½	.13
Furoic, tech, 100 lb drums..lb.	...	.35	...	.35	...	.35
Gallic, tech, bbls.....lb.	.60	.70	.60	.70	.60	.70
USP, bbls.....lb.	...	.77	.74	.77	...	.74
Gamma, 225 lb bbls wks..lb.	.77	.79	.77	.79	.75	.79
H, 225 lb bbls wks.....lb.	.65	.70	.65	.70	.60	.70
Hydriodic, USP, 10% soln cby .....lb.	.50	.51	.50	.51	.50	.51
Hydrobromic, 48%, coml, 155 lb cbys wks.....lb.	.45	.48	.45	.48	.45	.48
Hydrochloric, CP, see Acid Muriatic						
Hydrocyanic, cyl. wks....lb.	.80	.90	.80	.90	.80	.90
Hydrofluoric, 30%, 400 lb bbls wks.....lb.	...	.07	...	.07	.06	.07
Hydroflucsilicic, 35%, 400 lb. bbls wks.....lb.	.11	.12	.11	.12	.11	.12
Hypophosphorous, 30%, USP, demijohns .....lb.	.75	.80	.75	.80	.75	.80
Lactic, 22%, dark, 500 lb. bbls. .....lb.	.04	.04½	.04	.04½	.04	.04½
44%, light, 500 lb bbls..lb.	.11½	.12	.11½	.12	.11½	.12
Laurent's, 250 lb bbls.....lb.	.36	.37	.36	.37	.36	.37
Linoleic .....lb.	.16	.16	.16	.16	.16	.16
Maleic, cry. kegs.....lb.	...	.35	...	.35	...	...
Malic, powd, kegs.....lb.	.45	.60	.45	.60	.45	.60
Metanilic, 250 lb bbls....lb.	.60	.65	.60	.65	.60	.65
Mixed Sulfuric—Nitric..... tanks wks.....N unit	.06½	.07¼	.06½	.07¼	.06½	.07¼
tanks wks.....S unit	.008	.01	.008	.01	.008	.01
Monochloroacetic, tech bbl.lb.	.16	.18	.16	.18	.16	.18
Monosulfonic, bbls.....lb.	1.50	1.60	1.50	1.60	1.50	1.60
Muriatic, 18 deg, 120 lb cbys c-1 wks.....100 lb.	...	1.35	...	1.35	...	1.35
tanks, wks.....100 lb.	...	1.00	...	1.00	...	1.00
20 degrees, cbys wks.100 lb.	...	1.45	...	1.45	...	1.45
N & W.....250 lb bbls.	.85	.95	.85	.95	.85	.95
Naphthenic, drums.....lb.	.10	.11½	.10	.11½	.10	.11½
Naphthionic, tech.....250 lb.	.60	.65	.60	.65	.60	.65
Nitric, 36 deg, 135 lb cbys c-wks .....100 lb.	...	5.00	...	5.00	...	5.00
40 deg, 135 lb cbys, c-1 wks. .....100 lb.	...	6.00	...	6.00	...	6.00
Oxalic, 300lb bbls wks NY..lb.	.11⅞	.12⅜	.11⅞	.12⅜	.11	.12⅜
Phosphoric 50%, USP....lb.	...	.14	...	.14	...	.14
50%, acid, c.l. drums..lb.	.05	.05	.05	.05	.05	.05
75%, acid, c.l. drums..lb.	.07	.07	.07	.07	.07	.07
Picramic, 300 lb bbls....lb.	.65	.70	.65	.70	.65	.70
Picric, kegs.....lb.	.30	.50	.30	.50	.30	.50
Pyrogallic, crystals .....lb.	1.40	1.45	1.40	1.45	1.40	1.45
Salicylic, tech, 125 lb bbl..lb.	.33	.37	.33	.37	.33	.37
Sebacic, tech, drum.....lb.	.58	.58	.58	.58	.58	.58
Sulfanilic, 250 lb. bbls....lb.	.18	.19	.18	.19	.15	.17
Sulfuric, 66 deg, 180 lb. cbys 1c-1 wks.....100 lb.	1.60	1.95	1.60	1.95	1.60	1.95
tanks, wks.....ton	...	15.00	...	15.00	...	15.00
1500 lb dr wks....100 lb.	1.50	1.65	1.50	1.65	1.50	1.65
60°, 1500 lb dr wks..100 lb.	1.27½	1.42½	1.27½	1.42½	127½	1.42½
Oleum, 20%, 1500 lb. drs 1c-1 wks.....ton	...	18.50	...	18.50	...	18.50
40%, 1c-1 wks net....ton	...	42.00	...	42.00	...	42.00
Tannic, tech, 300 lb bbls.lb.	.23	.40	.23	.40	.23	.40
Tartaric, USP, gran. powd, 300 lb bbls.....lb.	...	.26	.25	.26	.20	.25
Tobias, 250 lb bbls.....lb.	.75	.80	.75	.80	.75	.80
Trichloroacetic bottles..lb.	2.00	2.75	2.00	2.75	2.00	2.75
Kegs .....lb.	...	1.75	...	1.75	...	1.75
Tungstic, bbls.....lb.	1.35	1.45	1.35	1.70	1.40	1.70
Albumen, blood,225 lb bbls.lb.	.45	.53	.35	.53	.35	.43
dark .....bbls., lb.	.12	.17	.10	.17	.10	.17
Egg, edible .....lb.	.83	.92	.85	.92	.74	.90
Technical, 200 lb cases..lb.	.62	.66	.62	.66	.62	.66
Vegetable, edible.....lb.	.65	.70	.65	.70	.60	.70
Technical .....lb.	.50	.55	.50	.55	.50	.55
Alcohol Butyl, Normal, 50 gal drs c-1 wks.....lb.	...	.10½	...	.10½	...	.10½
Drums, 1-c-1 wks.....lb.	...	.11	...	.11	...	.11
Tank cars wks.....lb.	...	.09½	...	.09½	...	.09½
Secondary tank.....lb.	...	.076	...	.076	...	...
drums carlots .....lb.	...	.086	...	.086	...	...
Amyl (from pentane) Tanks, del.....lb.	...	.143	...	.143	.143	.176
Drums, del.....lb.	.15	.157	.15	.157	...	...
Tertiary, drums, del....lb.	.082	.093	.082	.093	...	...
Tanks, del.....lb.	...	.052	...	.052	...	...
Capryl, tech, drums....lb.	...	.85	...	.85	...	.85
Diacetone, tanks.....lb.	.15¾	.16¾	.15¾	.16¾	.15¾	.16¾
Ethyl, USP, 190 pf, 50 gal. bbls .....gal.	...	4.15½	4.12½	4.24½	2.44½	2.65
No. 5. *188 pf, 50 gal. drs., drums extra†.gal.	...	.347*	.347*	.351*	...	.385*
No. S. D. 1, tanks...gal.	...	.295	.29½	.304	...	.304
Furfuryl, tech., 500 lb. drs. .....lb.	...	.35	.35	.40	.40	.45
Isobutyl, ref., gal. drs..gal.	...	.75	...	.75	...	.75
Isopropyl, ref, gal drs..gal.	...	.50	...	.50	.45	.50
Propyl Normal, 50 gal dr. .....gal.	...	.75	...	.75	...	.75
Aldehyde Ammonia, 100 gal. dr. .....lb.	.80	.82	.80	.82	.80	.82
Aldol. 95%, 1-cl dr.....lb.	...	.25	...	.25	...	...
c-1, dr.....lb.	...	.21	...	.21	...	...
Alpha-Naphthol, crude, 300 lb. bbls. .....lb.	.65	.70	.65	.70	.65	.70
Alpha-Naphthylamine, 350 lb. bbls. .....lb.	.32	.34	.32	.34	.32	.34
Alum Ammonia, lump, 400 lb. bbls, 1-c-1 wks....100 lb.	3.00	3.25	3.00	3.25	3.00	3.25
Chrome, 500 lb casks, wks .....100 lb.	7.00	7.25	6.50	7.25	4.50	6.50
Potash, lump, 400 lb casks wks .....100 lb.	3.00	3.50	3.00	3.50	3.00	3.50
Soda, ground, 400 lb bbls wks .....100 lb.	3.50	3.75	350	3.75	3.50	3.75
Aluminum Metal, c-1 NY .....100 lb.	22.90	24.30	22.90	24.30	22.00	24.30
Chloride Anhyd., 99%, wks .....lb.	.07	.12	.07	.12	...	...
93% grade, wks.....lb.	.04	.08	.04	.08	...	...
Hydrate, 96%, light, 90 lb. bbls. .....lb.	.13	.15	.13	.16½	.15	.16½
Palmitate, bbls.....lb.	.19	.20	.19	.20	...	...
Resinate, pp., bbls.....lb.	.12½	.14	.12½	.14	...	...
Stearate, 100 lb bbls....lb.	.17	.18	.17	.18	.12½	.18
Sulfate, Iron, free, bags c-1 wks .....100 lb.	1.90	1.95	1.90	1.95	1.90	1.95
Coml, bags c-1 wks 100 lb.	1.35	1.50	1.35	1.50	1.25	1.50
Aminoazobenzene, 110 lb kegs .....lb.	...	1.15	...	1.15	...	1.15
Ammonia						
Ammonia anhydrous Com. tks.	.04½	.05½§	.04½	.05½§	.04½	.05½
Ammonia anhyd, 100 lb cyl lb.	.15¾	.15½	.15¾	.15½	.15¾	.15½
Water, 26°, 800 lb dr del..lb.	.02½	.03	.02½	.03	.02½	.03
Ammonia, aqua 26° tanks.. NH cont.....	...	.05	...	.05	...	.05
Ammonium Acetate.....lb.	.26	.33	.26	.33	.26	.33
Bicarbonate, bbls., f.o.b. plant .....100 lb.	...	5.15	...	5.15	...	5.15
Bifluoride, 300 lb bbls..lb.	.15¼	.17	.15¼	.17	.15¼	.17
Ammonium carbonate, tech, 500 lb cs.....lb.	.08	.12	.08	.12	.08	.12
Chloride, White, 100 lb. bbls, wks .....100 lb.	5.00	5.25	5.00	5.25	4.45	5.25
Gray, 250 lb bbls wks..lb.	5.25	5.75	5.25	5.75	5.25	5.75
Lump, 500 lbs cks spot..lb.	.10	.11	.10	.11	.10	.11
Lactate, 500 lb bbls.....lb.	.15	.16	.15	.16	.15	.16
Linoleate .....lb.	...	.12	.11	.12	...	.11
Nitrate, tech, casks.....lb.	.03¾	.05	.03¾	.05	.03¾	.10
Oleate, drs.....lb.	...	.10	...	.10	...	.10
Persulfate, 112 lb kegs..lb.	.20	.22½	.20	.22½	.20	.22½
Phosphate, tech, powd, 325 lb. bbls .....lb.	.08	.10	.08	.11½	.08½	.11½

†Anhydrous 5c higher *Delivered metropolitan area, basic price 33c.
§Higher price is refrigeration grade.
the cost of tax paid ethyl alcohol. Quotation above includes this tax. Grain alcohol is 20c a gal. higher.

Current

Ammonium Phosphate
Butyl Carbitol

		Current Market	1934 Low	1934 High	1933 Low	1933 High
Sulfate, bulk c-l	100 lb.	...	1.18	1.18	1.25	1.00	1.25
Sulfocyanide, kegs	lb.	...	.50	...	.50	.36	.50
Amyl Acetate, (from pentane) Tanks del.	lb.	...	.13½	...	.13½	...	.13½
Tech., drs. del.	lb.	.142	.149	.142	.149	.138	.149
Secondary, tanks	lb.	...	.09	...	.09	...	.09
Amyl Alcohol, see also Fusel Oil							
Amyl Alcohol, sec.	lb.	...	.08½	.08½	.08½	...	...
Chloride, normal, drums, wks.	lb.	.56	.68	.56	.68	...	...
Chloride, mixed, drums, wks.	lb.	11.5	12.2	11.5	12.2	...	...
tank wks.	lb.	...	10.5	...	10.5	...	...
Lactate, wks, drums	lb.	...	.50	...	.50	...	...
Mercaptan, wks, drums	lb.	...	1.10	...	1.10	...	...
Stearate, wks, drums	lb.	...	.31	...	.31	...	...
Amylene, drums, wks.	lb.	.10	.11	.10	.11	...	...
tanks, wks.	lb.	...	.09	...	.09	...	...
Aniline Oil, 960 lb drs & tks	lb.	.15	.17½	.15	.17½	.14½	.16
Annatto fine	lb.	.34	.37	.34	.37	.34	.37
Anthracene, 80%	lb.	...	.75	...	.75	...	...
40%	lb.	...	.18	...	.18	...	...
Anthraquinone, sublimed, 125 lb. bbls.	lb.	...	.45	...	.45	...	.45
Antimony, metal slabs, ton lots	lb.	.08½	.08⅜	.07	.08⅞	.05⅝	.07½
Needle, powd., bbls.	lb.	.07	.08	.07	.09	.07	.09
Chloride, soln (butter of) cbys	lb.	.13	.17	.13	.17	.13	.17
Oxide, 500 lb bbls.	lb.	.08½	.11	.08	.11	.07½	.11
Salt, 63% to 65%, tins	lb.	.22	.24	.22	.24	.20	.24
Sulfuret, golden, bbls.	lb.	.16	.20	.16	.20	.16	.20
Vermilion, bbls.	lb.	.35	.42	.35	.42	.38	.42
Archil, conc, 600 lb bbls.	lb.	.21	.27	.21	.27	.20	.21
Double, 600 lb bbls.	lb.	.18	.20	.18	.20	.16	.17
Triple, 600 lb bbls.	lb.	.18	.20	.18	.20	.16	.17
Argols, 80%, casks	lb.	.15	.16	.15	.16	.12	.15
Crude, 30%, casks	lb.	.07	.08	.07	.09	.06¾	.09
Aroclors, wks	lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbl.	lb.	.08¾	.09¾	.08¾	.09¼	...	...
Arsenic, Red, 224 lb kegs, cs.	lb.	.15	.15½	.14	.15½	.09⅜	.14¾
White, 112 lb kegs	lb.	.04	.05	.04	.05	.04	.05
Metal	lb.	.40	.42	.40	.45	...	...
Asbestine, c-l wks.	ton	13.00	15.00	13.00	15.00	13.00	15.00
Barium Carbonate, precip, 200 lb. bags wks‡	ton	56.50	61.00	56.50	61.00	56.50	61.00
Nat. (witherite) 90% gr. car-lots wks bags	ton	...	45.00	...	45.00	...	...
Chlorate, 112 lb kegs NY	lb.	.15	.16	.15	.16	.13¾	.16
Chloride, 600 lb bbl wks.	ton	72.00	74.00	72.00	74.00	61.50	74.00
Dioxide, 88%, 690 lb drs.	lb.	.11	.13	.11	.13	.11	.13
Hydrate, 500 lb bbls.	lb.	.05	.06	.04¾	.06	.04¼	.05
Nitrate, 700 lb casks	lb.	...	.08¼	...	.08¼	...	.07¼
Barytes, Floated, 350 lb bbls wks	ton	23.00	30.50	23.00	30.50	22.20	30.50
Bauxite, bulk, mines	ton	5.00	8.00	5.00	8.00	5.00	6.00
Bayberry, bags	lb.	.25	.30	.25	.30	.14½	.17
Beeswax, Yel., crude bags.	lb.	.21	.22	.16	.22	.13	.20
Refined, cases	lb.	.26	.29	.21	.29	.18	.26
White, cases	lb.	.34	.37	.32	.37	.30	.35
Benzaldehyde, technical, 945 lb. drums wks.	lb.	.60	.65	.60	.65	.60	.65
Benzene, 90%, Industrial, 8000 gal tanks wks.	gal.	...	.19	.19	.20½	.20	.22
Ind. Pure, tanks wks.	gal.	...	.19	.19	.20½	.20	.22
Benzidine Base, dry, 250 lb. bbls.	lb.	.67	.69	.67	.69	.65	.67
Benzoyl, Chloride, 500 lb drs.	lb.	.40	.45	.40	.45	.40	.45
Benzyl Chloride, tech drs.	lb.	...	.30	...	.30	...	.30
Beta-Naphthol, 250 lb bbl wk	lb.	...	.24	...	.24	...	.24
Naphthylamine, sublimed 200 lb bbls.	lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls.	lb.	.53	.58	.53	.58	.53	.58
Bismuth, metal		...	1.20	1.20	1.30	.85	1.30
Bismuth Subnitrate		1.55	1.60	1.40	1.60	.95	1.40
Blackstrap, cane, (see Molasses, Backstrap)							
Blanc Fixe, 400 lb bbls wks	ton	42.50‡	70.00	42.50‡	70.00	42.50	75.00
Bleaching Powder, 800 lb drs c-l wks contract	100 lb.	...	1.90	...	1.90	1.75	1.90
Blood, Dried, fob, NY.	Unit	...	2.40	2.40	3.25	1.55	2.75
Chicago, high grade	Unit	...	2.00	2.00	3.10	...	...
S. American shipt.	Unit	...	2.75	2.75	3.15	1.90	3.00
Blues, Bronze Chinese Milori							
Prussian Soluble	lb.	.35½	.37½	.35½	.37½	...	.35
Bone, raw, Chicago	ton	21.00	22.00	20.00	25.00	19.00	28.00
Bone Ash, 100 lb kegs	lb.	.06	.07	.06	.07	.06	.07
Black, 200 lb bbls.	lb.	.05½	.08¼	.05½	.08¼	.05½	.08
Meal, 3% & 50%, Imp.	ton	17.00	19.00	16.00	20.00	18.00	27.50
Borax, bags	lb.	.018	.02	.018	.02	.018	.02
Bordeaux, Mix, 16% pwd.	lb.	.08	.16½	.08	.16½	.11½	.13
Brazilwood, sticks, shpmt.	lb.	26.00	28.00	26.00	28.00	26.00	28.00
Bromine, cases	lb.	.36	.43	.36	.43	.36	.43
Bronze, Alumi., pwd blk.	lb.	.50	.75	.50	.75	.50	.75
Gold bulk	lb.	.40	.55	.40	.55	.40	.55
Butanes, com 16.32° group 3 tanks	lb.	.02¾	.04	.02¾	.04	.02¾	.04
Butyl, Acetate, normal drs.	lb.	...	.11	...	.11	.11	.139
Tank, wks.	lb.	...	.10	...	.10	.10	.124
Secondary tanks, wks.	lb.	...	.08	...	.08	...	...
Aldehyde, 50 gal drs wks.	lb.	.35	.36	.35	.36	.31½	.36
Carbitol see Diethylene Glycol Mono (Butyl Ether)		...	...	...	...	...	...

‡Lowest price is for pulp; highest for high-grade precipitate.

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Carbinol
Cobalt Resinate

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Carbinol, Sec., drms.....lb.	.60	.60	.70	...	...
Carbinol, normal, drms, wks, ...lb.	.60	.60	.75	...	...
Cellosolve (see Ethylene glycol mono butyl ether)					
Furoate, tech, 50 gal dr.lb.	...	.60	.65	.50	.60
Lactate, drums.....lb.	...	...	.29	...	...
Propionate, drs.....lb.	.17	.17	.22	.20	.22
Stearate, 50 gal drs.....lb.	.25	.25	.25½	.25	.25
Tartrate, drs.....lb.	.55	.55	.60	.55	.60
Cadmium, Sulfide, boxes..lb.	.70	.65	.75	.65	.75
Calcium, Acetate, 150 lb bags c-l .....100 lb.	...	...	3.00	2.50	3.00
Arsenate, 100 lb bbls c-l wks .....lb.	.05	.05	.07	.05½	.07
Carbide, drs.....lb.	.05	.05	.06	.05	.06
Carbonate, tech, 100 lb bags c-l.....lb.	1.00	1.00	1.00	1.00	1.00
Chloride, Flake, 375 lb drs c-l wks.....ton	...	19.50	...	19.50	21.00
Solid, 650 lb drs c-l fob wks .....ton	...	17.50	...	17.50	18.00
Ferrocyanide, 350 lb. f.o.b. wks.....lb.	...	.17	...	.17	.17
Calcium Furoate, tech, 100 lb. drums .....lb.	...	.25	.25	.30	...
Nitrate, 100 lb bags....ton	...	26.50	...	26.50	24.00
Palmitate, bbls.....lb.	.19	.20	.19	.20	.16
Perioxide, 100 lb drs....lb.	...	1.25	...	1.25	...
Phosphate, tech, 450 lb bbls. .....lb.	.07½	.08	.07½	.08	.07½
Resinate, precip., bbls...lb.	.13	.14	.13	.14	...
Stearate, 100 lb. bbls...lb.	.17	.18	.17	.18	.12½
Camphor, slabs.....lb.	.52	.54	.52	.59	.35½
Powder .....lb.	.52	.54	.52	.59	.38
Camwood, Bk, ground bbls.lb.	.16	.18	.16	.18	.16
Candelilla Wax, bags.....lb.	.13	.14	.10¼	.14½	.09
Carbitol, (See Diethylene Glycol Mono Ethyl Ether)..	...	...	...	...	...
Carbon, Decolorizing, drums c-l .....lb.	.08	.15	.08	.15	.08
Black, 100-300 lb cases1c-l NY .....lb.	.07	.08	.06½	.08¼	.06
Bisulfide, 500 lb drs 1c-l NY .....lb.	.05½	.06	.05½	.06	.05½
Dioxide, Liq. 20-25 lb. cyl. .....lb.	...	.06	...	.06	...
Tetrachloride, 1400 lb drs delivered .....lb.	.05¼	.06	.05¼	.06	.05¼
Carnauba Wax, Flor, bags.lb.	.37	.38	.32	.38	.23
No. 1 Yellow, bags.....lb.	.32	.33	.30	.36	.20
No. 2 N Country, bags..lb.	Nominal		.20	.23	.14
No. 3 N. C.....lb.	.21	.21½	.16¼	.21½	.11½
No. 3 Chalky.....lb.	.19½	.20½	.16	.21½	.12
Casein, Standard, Domestic ground .....lb.	.12½	.13	.11½	.13	.06½
80-100 mesh c-l, bags....lb.	.13	.14	.12½	.14	...
Cellosolve (see Ethylene glycol mono ethyl ether)....					
Acetate (see Ethylene glycol mono ethyl ether acetate)					
Celluloid, Scraps, Ivory cs.lb.	...	.18	.13	.18	.13
Transparent, cases .....lb.	...	.20	.16	.20	...
Cellulose, Acetate, 50 lb kegs .....lb.	.55	.60	.55	.90	.80
Chalk, dropped, 175 lb bbls.lb.	.03	.03¾	.03	.03¾	.03
Precip, heavy, 560 lb cks..lb.	.03	.04	.03	.04	.02
Light, 250 lb casks.....lb.	.03	.04	.03	.04	.02½
Charcoal, Hardwood, lump, bulk wks.....bu.	.18	.19	.18	.19	.18
Willow, powd, 100 lb bbl. wks .....lb.	.06	.06¼	.06	.06¼	.06
Wood, powd, 100 lb. bbls.lb.	.04	.05	.04	.05	.04
Chestnut, clarified bbls wks.lb.	.01⅝	.01¾	.01⅝	.01¾	.01¼
25% tks wks.....lb.	...	.01½	.01¾	.01½	.012
Pwd, 60%, 100 lb. bags wks. .....lb.	...	.04⅞	...	.04⅞	...
Powd, decol. bgs wks...lb.	.05	.05¼	.05	.05¼	.04⅞
China Clay, lp, blk mines..ton	8.00	9.00	8.00	9.00	8.00
Powdered, bbls.....lb.	.01	.02	.01	.02	.01
Pulverized, bbls wks...ton	10.00	12.00	10.00	12.00	10.00
Imported, lump, bulk..ton	15.00	25.00	15.00	25.00	15.00
Chlorine, cyls 1c-1 wks contract .....lb.	.07	.08½	.07	.08½	.07
cyls, cl., contract.....lb.	...	.05½†	...	.05½†	...
Liq tank cyls wks contract .....100 lb.	...	1.85	...	1.85	1.75
Multi c-l cyls. wks cont..lb.	2.00	2.25	2.00	2.25	...
Chlorobenzene, Mono, 100 lb. drs 1c-1 wks.....lb.	.06	.07½	.06	.07½	.06
Chloroform, tech, 1000 lb drs .....lb.	.20	.21	.20	.21	.15
USP, tins.....lb.	.30	.31	.30	.35	...
Chloropicrin; comml cyls.lb.	.85	.90	.85	1.25	.90
Chrome, Green, CP.....lb.	.20	.30	.20	.30	.28
Commercial .....lb.	.06¼	.10	.06¼	.10	.06¼
Yellow .....lb.	.15	.16	.15	.16	.14
Chromium, Acetate, 8% Chrome bbls.....lb.	.05	.05¾	.05	.05¾	.04¾
20° soln, 400 lb. bbls..lb.	...	.05½	...	.05½	...
Fluoride, powd, 400 lb. bbl. .....lb.	.27	.28	.27	.28	.27
Oxide, green, bbls.....lb.	.22	.23	.22	.23	.19
Coal tar, bbls.....bbl.	8.50	9.00	8.50	9.00	8.50
Cobalt Acetate, bbls.....lb.	...	.60	.60	.80	...
Carbonate tech., bbls...lb.	1.35	1.40	1.34	1.40	...
Hydrate, bbls.....lb.	1.66	1.76	1.66	1.76	...
Linoleate, paste, bbls....lb.	...	.30	.30	.40	...
Resinate, fused, bbls....lb.	...	.12½	...	.12½	...
Precipitated, bbls.....lb.	...	.32	.32	.42	.41

Current

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Cobalt Oxide, black, bags..lb.	1.25	1.25	1.35	1.15	1.35
Cochineal, gray or bk. bg..lb.	.36	.36	.42	.36	.42
Teneriffe silver, bags...lb.	.37	.37	.43	.37	.43
Copper, metal, electrol..100 lb.	...	7.87½	8.50	5.00	9.00
Carbonate, 400 lb bbls..lb.	...	...	.08¼	.07	.08
52-54% bbls.....lb.	.15½	.15½	.16	.15¾	.17¼
Chloride, 250 lb bbls....lb.	.17	.17	.18	.17	.18
Cyanide, 100 lb drs.....lb.	.37	.37	.40	.39	.40
Oleate, precip., bbls.....lb.	...	...	.20	...	...
Oxide, red, 100 lb bbls..lb.	.15	.12½	.17	.14¾	.15
Resinate, precip., bbls..lb.	.18	.18	.19	...	...
Stearate, precip., bbls...lb.	.35	.35	.40	...	...
Sub-acetate verdigris, 400 lb. bbls.....lb.	.18	.18	.19	.18	.19
Sulfate, bbls c-l wks.100 lb.	...	3.75	3.85	3.00	3.75
Copperas, crys and sugar bulk c-l wks bags.....ton	14.00	14.00	14.50	14.00	14.50
Corn Syrup, 42 deg., bbls. .....100 lb.	...	3.04	3.24	2.61	3.04
43 deg., bbls.....100 lb.	...	3.09	3.29	2.66	3.09
Cotton, Soluble, wet, 100 lb. bbls. .....lb.	.40	.40	.42	.40	.42
Cream Tartar, USP, powd., & gran., 300 lb. bbls..lb.	.19¼	.17½	.19½	.14½	.17¾
Creosote, USP., 42 lb cbys lb.	.45	.45	.47	.40	.47
Oil, Grade 1 tanks...gal.	.11	.11	.12	.11	.12
Grade 2.....gal.	.10	.10	.12	.10	.12
Grade 3.....gal.	.09	.09	.12	.09	.12
Cresol, USP. drums....lb.	...	.11	...	.11	.10½ .11
Crotonaldehyde, 98% 50 gal. dr. .....lb.*	.26	.26	.30	.32	.36
Cudbear, English .....lb.	.19	.19	.25	.16	.25
Cutch, Rangoon, 100 lb. bales .....lb.	...	...	.02¾	.02½	.03
Borneo, Solid, 100 lb. bale .....lb.	...	...	.04½	.02½	.04½
Philippine, 100 lb bale .lb.	.03½	.03½	.04¾	...	...
Cyanamid, bags c-l frt allowed Ammonia unit..	...	1.07½	...	.97½	1.07½
Dextrin, corn, 140 lb bags ..... 100 lb.	3.50	3.50	3.82	2.89	3.84
British Gum, bags.100 lb.	3.75	3.75	4.07	3.89	3.92
White, 140 lb bags.100 lb	3.47	3.47	3.67	2.94	3.79
Potato Yellow, 220 lb bgs .....lb.	.07¾	.07¾	.08¾	.07¾	.09
White, 220 lb bags 1c-l lb	.08	.08	.09	.08	.09
Tapioca, 200 bags 1c-l.lb.	.06¾	.06¾	.07¾	.06¾	.08
Diamylamine, drums, wks.lb.	...	...	1.00	...	...
Diamylene, drums, wks..lb.	.09	.09	.10	...	...
tanks, wks .....lb.	...	...	.08½	...	...
Diamylether, wks., drums lb.	.60	.60	.77	...	...
Diamylphthalate, drs wks.gal.	...	...	.20½	...	...
Diamyl Sulfide, drms, wks.lb.	...	...	1.10	...	...
Dianisidine, barrels .....lb.	2.35	2.35	2.45	2.35	2.70
Dibutylphthalate, wks ...lb.	.20½	.20½	.21	.20½	.22
Dibutyltartrate, 50 gal drs lb.	.29½	.29½	.31½	.29½	.21
Dichlorethylene, drums...gal.	.29	.29	...	...	...
Dichloroethylether, 50 gal drs. .....lb.	...	...	.21	.16	.21
Dichloromethane, drs wks.lb.	...	...	.15	...	...
tanks, wks .....lb.	...	...	.02½	...	...
Dichloropentanes, drums, wks. .....lb.	.0278	.0278	.036	...	...
tanks, wks.....lb.	...	...	.02½	...	...
Diethyamine, 400 lb drs ..lb.	2.75	2.75	3.00	2.75	3.00
Diethyl Carbinol, drums..lb.	.60	.60	.75	...	...
Diethylcarbonate, com. drs lb.	...	...	.35	...	...
90% grade, drs.....lb.	...	...	.25	...	...
Diethylaniline, 850 lb drs lb.	.52	.52	.55	.52	.55
Diethyleneglycol, drs ....lb.	.14	.14	.16	.14	.16
Mono ethyl ether, drs.lb.	.15	.15	.16	.15	.16
Mono butyl ether, drs.lb.	...	...	.26	...	.26
Diethylene oxide, 50 gal drs ..... lb.	.26	.26	.27	.26	.27
Diethylorthotoluidin, drs..lb.	.64	.64	.67	.64	.67
Diethyl phthalate, 1000 lb. drums .....lb.	.26	.26	.27	.20	.26
Diethysulfate, technical, 50 gal drums .....lb.	...	...	...	...	...
Diglycol Oleate, bbls.....lb.	...	...	.16	...	...
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis .....lb.	...	1.20	...	1.20	...
Dimethylaniline, 340 lb drs lb.	.29	.29	.30	.25	.28
Dimethyl Ethyl Carbinol, drs. .....lb.	.60	.60	.70	...	...
Dimethyl phthalate drs...lb.	...	...	.24½	...	...
Dimethysulfate, 100 lb drs lb.	.45	.45	.50	.45	.50
Dinitrobenzene, 400 lb bbls lb.	.17	.17	.19½z	...	.18
Dintrochlorobenzene, 400 lb bbls .....lb.	.14½	.14½	.15½	.13	.15
Dinitronaphthalene, 350 lb bbls .....lb.	.34	.34	.37	.34	.37
Dinitrophenol, 350 lb bbls lb.	.23	.23	.24	.23	.24
Dinitrotoluene, 300 lb bbls lb.	.15½	.15½	.16½	.15	.17
Dioxan (See Diethylene Oxide)	...	...	...	...	...
Diphenyl .....lb.	.15	.15	.25	.15	.40
Diphenylamine .....lb.	.31	.31	.34	.31	.34
Diphenylguanidine, 100 lb bbl ..... lb.	.36	.36	.37	.30	.37
Dip Oil, 25%, drums.....lb.	.23	.23	.25	.23	.25
Divi Divi pods, bgs shipmt ..... ton	35.00	35.00	36.00	26.00	36.00
Extract .....lb.	.05	.05½	.05½	.05	.05½
Egg Yolk, 200 lb cases.. lb.	.42½	.40	.47	.40	.43
Epsom Salt, tech, 300 lb bbls c-l NY .....100 lb.	...	2.20	2.25	...	2.20
Ether, USP anaesthesia 55 lb drs .....lb.	.22	.22	.24	.22	.24
(Conc) .....lb.	.09	.09	.10	.09	.10

‡Higher price refined. xTanks 2c lower. zHigher price for purified.

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99% Straw Color and 95% Dark
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REAGENTS
HYDROCARBON OIL
SHINGLE STAIN OIL
SPECIAL HEAVY OIL
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TOLUOL
XYLOL
SOLVENT NAPHTHA
HI-FLASH NAPHTHA

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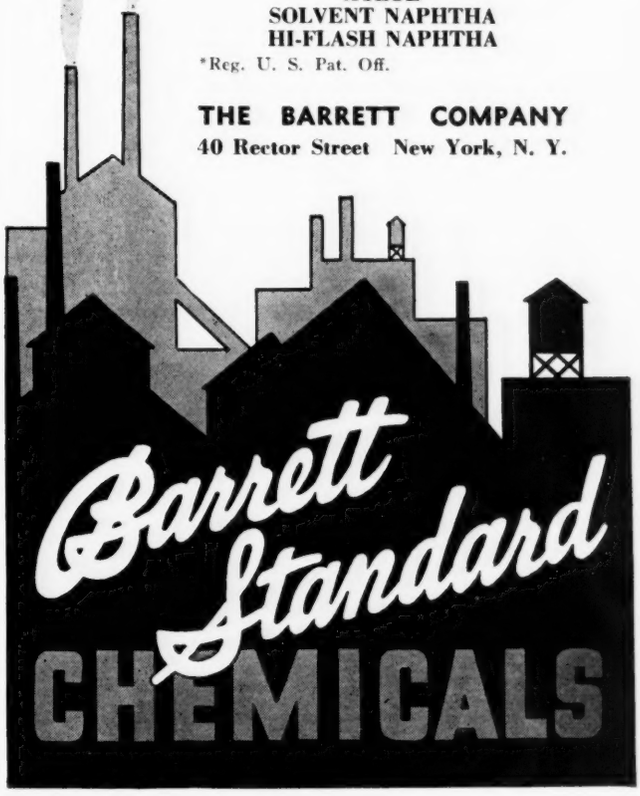

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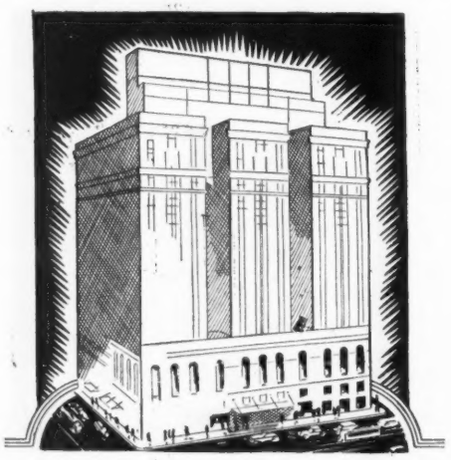

Two famous restaurants, a tap room, a cafeteria, a roof garden decorated by the late Joseph Urban, the Continental Bar, the Halter and Hurdle Room, and famous dance orchestras provide a variety of opportunities for food, drink and entertainment at a wide range of prices. Rooms are cozy and elegantly furnished, rates reasonable. Centrally located, a few steps from anywhere.

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PITTSBURGH, PA.

1600 ROOMS • 1600 BATHS

Ether
Gum Damar Batavia

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Isopropyl 50 gal drums lb.	.07‡x	.08	.07‡x	.08	.07	.08
Synthetic, wks, drums..lb.	.08	.09	.08	.09	...	...
Ethyl Acetate, 85% Ester tanks .....lb.	.07½	.08	.07½	.08	.07½	.09
drums .....lb.	.08½	.09	.08½	.09	.08½	.10
Anhydrous, tanks .....lb.	.09	.10	.09	.10	.09	.10
drums .....lb.	.10	.10¼	.10	.10¼	.10	.10¼
Acetoacetate, 50 gal drs lb.	.65	.68	.65	.68	.65	.68
Benzylaniline, 300 lb drs lb.	.88	.90	.88	.90	.88	.90
Bromide, tech, drums..lb.	.50	.55	.50	.55	.50	.55
Chloride, 200 lb drums..lb.	.22	.24	.22	.24	.22	.24
Chlorocarbonate cbys...lb.	...	.30	...	.30	...	.30
Crotonate, drums.....lb.	1.00	1.25	1.00	1.25	...	...
Ether, Absolute, 50 gal drs .....lb.	.50	.52	.50	.52	.50	.52
Lactate, drums works..lb.	.25	.29	.25	.33	.25	.29
Methyl Ketone, 50 gal drs .....lb.	.08½	.09	.08½	.09	...	.12½
Oxalate, drums works.lb.	.37½	55	.37½	.55	.37½	.55
Oxybutyrate, 50 gal drs wks .....lb.	.30	.30½	.30	.30½	.30	.30½
Ethylene Dibromide, 60 lb dr.....lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont.....lb.	.75	.85	.75	.85	.75	.85
Dichloride, 50 gal drums lb.	.06	.09	.05½	.09	.05	.09
Glycol, 50 gal drs wks lb.	.26	.28	.26	.28	.25	.28
Mono Butyl Ether drs wks	...	.20	...	.20	...	.20
Mono Ethyl Ether drs wks	.16	.17	.15	.17	.15	.17
Mono Ethyl Ether Acetate dr wks.....	17½	.18	.16½	.18	.16½	.18
Mono Methyl Ether, drs ..... lb.	.21	.23	.21	.23	.21	.23
Stearate	.18	.18	.18	.18	.18	.18
Oxide, cyl.....lb.	...	.75	...	.75	...	.75
Ethylidenaniline .....lb.	.45	.47½	.45	.47½	.45	.47½
Feldspar, bulk pottery...ton	...	14.50	...	14.50	14.00	16.50
Powdered, bulk works.ton	13.50	14.50	13.50	14.50	13.50	14.50
Ferric Chloride, tech, crystal 475 lb bbls.....lb.	.05	.07½	.05	.07½	.04½	.07½
Fish Scrap, dried, wks...unit	...	Nom.	...	2.50*	1.85	2.75*
Acid, Bulk 7 & 3½% delivered Norfolk & Balt. basis .....unit	...	Nom.	...	2.50†	1.85	2.50†
Fluorspar, 98%. bags.....28.00		35.50	28.00	35.50	28.00	35.50
Formaldehyde, aniline, 100 lb. drums .....lb.	.37½	.42	.37½	.42	.37½	.42
USP, 400 lb bbls wks.lb.	.06	.07	.06	.07	.06	.07
Fossil Flour .....lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, bulk, mines .....ton	15.00	20.00	15.00	20.00	15.00	20.00
Imp. powd c-l bags...ton	24.00	30.00	23.00	30.00	24.00	30.00
Furfural (tech.) drums wks .....lb.	.10§	.15	.10§	.15	.10	.15
Furfuramide (tech) 100 lb dr .....lb.	...	.30	...	.30	...	.30
Furfuryl Acetate, 1 lb tins lb.	...	5.00	...	5.00	...	5.00
Fusel Oil, 10% impurities lb.	.16	.18	.16	.18	.14½	.18
Fustic, chips .....lb.	.04	.05	.04	.05	.04	.05
Crystals, 100 lb. boxes..lb.	.20	.23	.20	.23	.18	.23
Liquid 50°, 600 lb. bbls.lb.	.08½	.12	.08½	.12	.07	.10
Solid, 50 lb. boxes.....lb.	.16	.18	.16	.18	.14	.18
Sticks .....ton	25.00	26.00	25.00	26.00	25.00	26.00
G Salt paste, 360 lb bbls.lb.	.42	.43	.42	.43	.42	.43
Gall Extract .....lb.	.18	.20	.18	.20	.18	.20
Gambier, com. 200 lb. cs...lb.	.04½	.05½	.04	.05½	.03	.07
Singapore cubes, 150 lb. bg. ..... 100 lb.	.05½	.06	.05	.07	.05¼	.08
Gelatin, tech, 100 lb cases.lb.	.45	.50	.45	.50	.45	.50
Glauber's Salt, tech, c-l wks. .....100 lb.	1.10	1.30	1.10	1.30	1.00	1.70
Glucose (grape sugar) dry 70-80° bags c-l NY.100 lb.	3.24	3.34	3.24	3.34	3.24	3.34
Tanner's Special, 100 lb. bags .....100 lb.	...	2.33	...	2.33	...	2.33
Glue, bone, com. grades, c-l bags .....lb.	.08	.12½	.08	.12½	...	...
Better grades, c-l, bags.lb.	.12½	.16	.12½	.16	...	...
Casein, kegs .....lb.	.18	.22	.18	.22	...	...
Hide, high grd, c-l. bags.lb.	.23	.28	.23	.28	...	...
Med. grd, c-l, bags..lb.	.19	.23	.19	.23	...	...
Low grade, c-l, bags..lb.	.13½	.19	.13½	.19	...	...
Glycerin, CP, 550 lb drs..lb.	.13½	.14	.11	.14	.10¼	.11
Dynamite, 100 lb drs...lb.	.13	.13½	.10	.13½	.07½	.10¼
Saponification, tanks ...lb.	.10	.10⅛	.06¾	.10⅛	.05	.08
Soap Lye, tanks.....lb.	.09	.09⅛	.06¼	.09⅛	.04	.06½
Glyceryl Stearate, bbls.....lb.	...	.18	...	.18	.17	.18
Graphite, Crystalline, 500 lb bbls..lb.	.04	.05	.04	.05	.04	.05
Flake, 500 lb. bbls.....lb.	.08	.16	.08	.16	.08	.16
Amorphous, bbls. .....lb.	.03	.04	.03	.04	.03	.04
GUMS						
Gum Aloes, Barbadoes....lb.	.87	.90	.85	.90	.85	.90
Animi (Zanzibar) bean & pea. 250 lb. cases.....lb.	.35	.40	.35	.40	.35	.40
Glassy, 250 lb cases.....lb.	.50	.55	.50	.55	.50	.55
Arabic, amber sorts.....lb.	.08⅞	.09½	.07¾	.09½	.05¾	.08¼
Asphaltum, Barbadoes (Manjak) 200 lb bags.....lb.	.03	.04	.03	.06	.03	.05
Egyptian, 200 lb cases....lb.	.12	.15	.12	.15	.13	.15
Ester, light .....lb.	.06½	.07	.06	.07	...	...
Gamboge, pipe, cases.....lb.	.60	.65	.57	.65	.42	.65
Powdered, bbls .....lb.	.70	.75	.67	.75	.50	.70
Damar Batavia standard 136 lb. cases .....lb.	.13¼	.13¾	.12⅞	.13¾	.08½	.15½

* & 10; † & 50. § Tanks, 1c lower.

Current

Gum Batavia Dust
Linseed Meal

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Batavia Dust, 160 lb bags..lb.	.053/4	.061/4	.053/4	.07	.04	.071/2
E Seeds, 136 lb cases...lb.	.077/8	.083/8	.077/8	.091/2	.051/2	.091/2
F Splinters, 136 lb cases and bags .....lb.	.051/2	.06	.051/2	.06	.051/2	.06
Singapore,						
No. 1, 224 lb cases....lb.	.151/2	.16	.151/2	.18	.091/2	.18
No. 2, 224 lb cases....lb.	.101/2	.11	.101/4	.11	.07	.111/2
No. 3, 180 lb bags.....lb.	.051/8	.055/8	.051/8	.07	.041/2	.071/2
Benzoin Sumatra, U.S.P. 120 lb. cases .....lb.	.21	.23	.21	.23	.17	.23
Copal Congo, 112 lb. bags, clean, opaque .....lb.	.241/8	.245/8	.241/8	.28	.161/2	.28
Dark, amber .....lb.	.083/4	.091/4	.085/8	.101/2	.06	.101/2
Light, amber .....lb.	.145/8	.147/8	.143/8	.19	.08	.19
Water, white .....lb.	.415/8	.423/8	.415/8	.48	.37	.48
Kino, tins .....lb.	.75	.80	.75	.80	...	...
Mastic .....lb.	.50	.501/2	.35	.501/2	.267/8	.40
Manila 180-190 lb. baskets						
Loba A .....lb.	.113/8	.117/8	.113/8	.141/2	.09	.131/2
Loba B .....lb.	.11	.111/2	.11	.131/2	.08	.13
Loba C .....lb.	.093/4	.101/4	.093/4	.12	.07	.12
M A Sorts .....lb.	.063/4	.071/4	.061/2	.071/2	.05	.07
D B B Chips.....lb.	.08	.081/2	.08	.091/2	.053/4	.091/2
East Indies chips, 180 lb bags .....lb.	.04	.041/2	.04	.05	.04	.07
Pale bold, 224 lb cs...lb.	...	.17	.16	.17	.051/2	.17
Pale nubs, 180 lb bags.lb.	.101/2	.103/4	.101/2	.13	.05	.13
Pontianak, 224 lb cases						
Bold gen No. 1.....lb.	.175/8	.181/2	.171/2	.19	.14	.181/2
Gen. chips spot .....lb.	.075/8	.081/8	.071/4	.083/4	.05	.08
Elemi, No. 1, 80-85 lb cs..lb.	.091/8	.095/8	.093/4	.111/2	.09	.121/2
No. 2, 80-85 lb cases..lb.	.091/4	.091/2	.093/4	.111/4	.081/2	.12
No. 3, 80-85 lb cases..lb.	.08	.081/2	.08	.081/2	.08	.081/2
Ghatti, sol. bags.....lb.	.09	.091/2	.09	.091/2	.06	.091/2
Karaya, pow. bbls xxx....lb.	.23	.25	.23	.25	...	...
xx .....lb.	.15	.16	.15	.16	...	...
No. 1 .....lb.	.10	.11	.10	.11	...	...
No. 2 .....lb.	.07	.08	.07	.09	...	...
Kauri, 224-226 lb cs No. 1.lb.	.19	.191/2	.19	.25	.20	.25
No. 2 fair pale.....lb.	.141/2	.15	.121/2	.16	.121/2	.16
Brown Chips, 224-226 lb. cases .....lb.	.061/2	.081/2	.061/2	.081/2	.061/2	.12
Bush Chips, 224-226 lb. cases .....lb.	.22	.221/2	.22	.24	.22	.24
Pale Chips, 224-226 lb. cases .....lb.	.111/2	.14	.11	.14	.11	.14
Sandarac, prime quality, 200 lb bags & 300 lb casks.lb.	.48	.481/2	.44	.50	.21	.50
Senegal, picked bags.....lb.	.17	.18	.17	.18	...	...
Sorts .....lb.	.083/8	.09	.08	.09	...	...
Thus, bbls. .....280 lbs.	...	10.50	9.50	10.50	...	...
Strained .....280 lbs.	...	10.75	9.50	10.75	...	...
Tragacanth, No. 1 bags...lb.	1.15	1.20	1.00	1.20	.65	1.00
Yacca, bags .....lb.	.031/4	.033/4	.031/4	.04	...	...
Hematine crystals, 400 lb bbls. .....lb.	.16	.18	.16	.18	.10	.18
Paste, 500 bbls.....lb.	...	.11	...	.11	...	.11
Hemlock 25%, 600 lb. bbls. wks. .....lb.	.031/2	.041/2	.031/2	.041/2	.031/2	.041/2
Bark .....ton	...	16.00	...	16.00	...	16.00
Hexalene, 50 gal drs wks..lb.	...	.30	...	.30	...	.30
Hexane, normal 60-70°C. Group 3, tanks.....gal.	...	.14	...	.14	...	...
Hexamethylenetetramine, drums .....lb.	.37	.39	.37	.39	...	...
Hoof Meal, fob Chicago.unit	...	1.80	1.85	2.60	.75	1.75
South Amer. to arrive.unit	...	1.85	1.65	1.80	1.40	1.75
Hydrogen Peroxide, 100 vol. 140 lb cbys.....lb.	.20	.21	.20	.21	.20	.21
Hydroxyamine Hydrochloride .....lb.	...	3.15	...	3.15	...	3.15
Hypernic, 51°, 600 lb bbls.lb.	.17	.20	.17	.20	.11	.20
Indigo Madras, bbls.....lb.	1.25	1.30	1.25	1.30	1.25	1.30
20% paste, drums.....lb.	.15	.18	.15	.18	.15	.18
Synthetic, liquid .....lb.	...	.12	...	.12	...	.12
Iodine, crude .....per kilo	...	15s 1d	...	15s 1d	...	...
Resublimed, kegs .....lb.	2.25	2.30	2.25	2.30	2.10	3.40
Irish Moss, ord. bales....lb.	.07	.08	.07	.08	...	...
Bleached, prime, bales..lb.	.14	.15	.14	.15	...	...
Iron Acetate Liq. 17°,bbls.lb.‡	.03	.04	.03	.04	...	...
Iron Chloride see Ferric or Ferrous						
Nitrate, kegs .....lb.	.09	.10	.09	.10	.09	.10
Coml, bbls. .....100 lb.	2.75	3.25	2.75	3.25	2.50	3.25
Oxide, English.....lb.	.083/4	.09	.083/4	.09	.04	.07
Isobutyl Carbinol (128-132°C) drums, wks.....lb.	...	.329	.34	.329	...	.34
tanks, whks, lb.....lb.	...	.326	...	.326	...	...
Isopropyl Acetate, tanks...lb.	...	.071/2	.07	.071/2	...	...
Japan Wax, 224 lb cases..lb.	.06	.061/2	.06	.08	.051/2	.08
Keiselguhr, 95 lb. bgs. N.Y. Brown .....ton	60.00	70.00	60.00	70.00	60.00	70.00
Lead Acetate,bbls wks.100 lb.	...	9.50	...	9.50	8.50	9.50
White crystals, 500 lb bbls wks .....100 lb.	...	10.50	...	10.50	9.50	10.50
Arsenate, drs cl-lcl, wks.lb.	.09	.101/2	.07	.18	.09	.101/2
Linoleate, solid bbls.....lb.	.26	.261/2	.26	.261/2	...	...
Metal, c-l NY .....100 lb.	...	4.00	4.00	4.25	3.00	4.50
Nitrate, 500 lb bbls wks.lb.	.10	.14	.10	.14	.10	.14
Oleate, bbls. .....lb.	.15	.16	.15	.16	.15	.16
Lead Oxide Litharge, 500 lb. bbls. .....lb.	.051/2	.061/2	.051/2	.063/4	.051/2	.07
Red, 500 lb bbls wks..lb.	.061/2	.071/2	.061/2	.073/4	.061/2	.08
Resinate, precip., bbls..lb.	...	.14	.14	181/2	...	...
Stearate, bbls .....lb.	.22	.23	.22	.23	...	...
White, 500lb bbls wks.lb.	.061/2	.07	.061/2	.07	.06	.07
Sulfate,500lb bbls wks.lb.	...	.06	...	.06	.051/2	.06
Lime, ground stone bags.ton	...	9.25	4.50	9.25	...	4.50
Lime Salts, see Calcium Salts						
Lime-Sulfur soln bbls....gal.	.14	.33	.14	.33	.15	.17
Linseed cake, bulk.....ton	20.50	23.00	20.50	27.00	17.50	27.50
Linseed Meal .....ton	30.50	31.00	30.50	37.00	28.00	37.00

‡Higher price for lcl quantities.

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VI

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Dipentene No. 122 produces a flow and ease of brushing in varnishes made with synthetic resins that is obtained with few other solvents. It improves the wetting and grinding of pigments and produces stable suspensions and a minimum of settling. Its rate of evaporation is uniform.

3. Stiffener for Hats and Clothing

Nitrocellulose lacquers are excellent stiffeners for fabrics, and they make the fabric waterproof. There are many undeveloped possibilities for their use in the clothing industry for stiffening or sizing fabrics of all kinds.

4. Colloidal Wax Size

Paracol is a water-dispersible emulsion of colloidal wax in stable form. It is white, tasteless, and odorless, and can be added in the sizing tub or used as the coating mixture. It improves printing surfaces and is suitable for use in papers intended for food protection.

5. Superior to Animal Glue

Adhesives made from nitrocellulose are more expensive than animal glues, but their resistance to moisture and greater binding strength make them far more efficient under certain conditions.

6. Economical Powerful Thinner

Hercules No. 22 Thinner is a powerful solvent, with a Kauri Butanol value of 55-65. Because of its high terpene content, it has most of the advantages of terpene solvents. It can be blended with petroleum thinners, turpentine, and coal tar thinners, because it is completely miscible with these solvents.

7. Better Wearing Thread

To increase the wearing qualities of thread in sewing machines it is stiffened with nitrocellulose lacquer and then polished.

8. Odorless Lacquer

Hercolyn has a faint ester-like odor, but when added to most products, especially nitrocellulose lacquers, this odor is not apparent. A sweat-drying treatment will make lacquer containing Hercolyn completely odorless.

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SULPHUR CHLORIDE · SILICON TETRACHLORIDE
AND OTHER QUALITY PRODUCTS

Lithopone Orange-Mineral — *Prices*

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Lithopone, 400 lb bbls lc-l wks ..... lb.	.04¾	.05	.04¾	.05	.04¾	.05
Logwood, 51°, 600 lb bbls. lb.	.08½	.12½	.08½	.12½	.05	.12½
Solid, 50 lb boxes ..... lb.	.14½	.17½	.14½	17½	.08	.17½
Sticks ..... ton	24.00	26.00	24.00	26.00	24.00	26.00
Madder, Dutch ..... lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbl. ton	60.00	65.00	55.00	65.00	46.00	65.00
Magnesium Carb, tech, 70 lb. bags NY ..... lb.	...	.06½	...	.06½	.05¾	.06½
Chloride flake, 375 lb drs c-l wks ..... ton	36.00	39.00	34.00	39.00	34.00	36.00
Imported shipment ... ton	31.75	33.00	31.75	33.00	31.75	33.00
Fused, imp., 900 lb bbls NY ..... ton	...	31.00	...	31.00	...	31.00
Magnesium Fluosilicate, crys, 400 lb bbls, wks..... lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, USP, light, 100 lb. bbls ..... lb.	...	.42	...	.42	...	.42
Heavy, 250 lb bbls.... lb.	...	.50	...	.50	...	.50
Palmitate, bbls ..... lb.	.21	.22	.21	.22	...	...
Linoleate, lig. drums.... lb.	.18	.19	.18	.19	...	...
Resinate, fused, bbls.... lb.	.08¼	.08½	.08¼	.08½	...	...
precip., bbls. ..... lb.	...	.12	.11½	.12½	...	...
Sulfate, Anhyd., 550 lb drs N Y ..... lb.	.09	.09½	.08	.09½	.07	.08
Manganese Borate, 30%, 200 lb. bbls. ..... lb.	.15	.16	.15	.16	.15	.16
Chloride, 600 lb casks.. lb.	.07	.08	.07	.08	.07	.08
Dioxide, tech (peroxide) drs ..... lb.	.03¾	.06	.03¾	.06	.03½	.06
Mangrove 55%,400 lb bbls. lb.	...	.04	...	.04	...	.04
Bark, African ..... ton	...	28.00	27.00	31.00	22.00	31.00
Marble Flour, bulk..... ton	12.00	13.00	12.00	13.00	12.00	13.00
Mercuric chloride ..... lb.	.88	.93	.82	.93	.67	.87
Mercury metal ....76 lb. flask	74.50	77.00	66.50	79.00	48.00	69.00
Meta-nitro-aniline ..... lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-para-oluidine 200 lb. bbls ..... lb.	1.40	1.55	1.40	1.55	1.40	1.55
Meta-phenylene-diamine 300 lb bbls ..... lb.	.80	.84	.80	.84	.80	.84
Peroxide, 100 lb cs..... lb.	1.20	1.25	1.20	1.25	1.00	1.25
Silicofluoride, bbls ..... lb.	.09	.10	.09	.11	.08¾	11.
Stearate, bbls ..... lb.	.19	.20	.19	.20	.16½	.20
Meta-toluene-diamine, 300 lb. bbls ..... lb.	.67	.69	.67	.69	.67	.69
Methanol (Wood Alcohol)						
*Crude, tanks ..... gal.	...	.25	...	.25	.20	.20
95% tanks ..... gal.	.33	.35	.33	.35	.33	.35
97% tanks ..... gal.	.34	.39	.34	.39	.34	.39
*Pure, Synthetic drs cars. gal.	...	.40	...	.40	.37½	.40
*Synthetic, tanks ..... gal.	...	.35½	...	.35½	...	.35½
*Denat. grade, tanks.... gal.	...	.43	.40	.43	.35	.40
Methyl Acetate drs 82%. gal.	.12	.13	.12	.13	.12	.13
99% tanks ..... gal.	...	.15	...	.15	...	.15
Acetone, drums ..... gal.	.53½	.56	.53½	.57	.42	.57
Hexyl Ketone, pure... lb.	...	1.20	...	1.20	...	1.20
Anthrapuinone ..... lb.	.65	.67	.65	.67	.65	.67
Butyl Ketone, tanks.... lb.	...	.10½	.10½	.10½	...	...
Cellosolve (See Ethylene Glycol Mono Methyl Ether)						
Chloride, 90 lb cyl..... lb.	.45	.45	.45	.45	.45	.45
Ethyl Ketone, tanks..... lb.	...	.07½	.07½	.07½	...	...
Mica, dry grd. bags wks.. lb.	65.00	80.00	65.00	80.00	65.00	80.00
Michler's Ketone, kegs.... lb.	...	2.50	...	2.50	2.50	3.00
Molasses, blackstrap, tanks f.o.b. N. Y. ..... gal.	.06	.06⅛	.06	.09	.04½	.07
Monoamylamine, drs, wks. lb.	...	1.00	...	1.00	...	...
Monochlorobenzene, drums, see Chlorobenzene, mono.						
Monomethylparaminosulfate, 100 lb drums..... lb.	3.75	4.00	3.75	4.00	3.75	4.00
Montan Wax, crude, bags. lb.	.10½	.11	.10	.11	.03¾	.10
Myrobalans 20%, liq bbls.. lb.	.03¾	.04¼	.03¾	.04¼	.03¾	.04¼
50% Solid, 50 lb boxes. lb.	.06	.06¼	.06	.06¼	.05	.06¼
J1 bags ..... ton	...	27.50	27.00	32.00	27.00	35.00
J2 bags ..... ton	16.25	16.50	16.25	18.00	15.00	22.00
R2 bags..... ton	16.25	16.50	16.25	18.00	15.00	22.00
Naphtha, v.m. & p. (deodorized) tanks, Group 3 tanks ..... gal.	.06⅞	.07¼	.06⅞	.07¼	...	...
Bayonne, tanks..... lb.	...	.09½	...	.09½	.08½	.09½
Naphthalene balls, 250 lb bbls wks. ..... lb.	.06	.07	.06	.07	.05½	.07
Crude, imp ..... 100 lb.	1.15	1.90	1.75	2.15	1.75	2.15
Crushed, chip. bgs wks.. lb.	...	.05	...	.05	...	.05
Flakes, 175 lb bbls wks. lb.	...	.07¼	...	.07¼	...	.07¼
Nickel Chloride, bbls..... lb.	.18	.19	.18	.19	.17	.19
Oxide, 100 lb kegs NY.. lb.	.35	.37	.35	.37	.35	.37
Salt bbl 400 bbls lb NY. lb.	.11½	.12	.11½	.12	.11	.13
Single, 400 lb bbls NY. lb.	.11½	.12	.11½	.12	.11	.12
Metal ingot..... lb.	.35	.35	.35	.35	.35	.35
Nicotine, free 40%, 8 lb tins, cases	8.25	10.15	8.25	10.15	...	...
Sulfate, 55 lb. drums... lb.	.67	.75	.67	.75	.67	.75
Nitre Cake, blk..... ton	12.00	14.00	12.00	14.00	10.00	14.00
Nitrobenzene, redistilled, 1000 lb. drs wks‡..... lb.	.08½	.11	.08½	.11	.08½	.11
Nitrocellulose, c-l-l-cl, wks. lb.	.27	.33	.27	.33	.27	.33
Nitrogenous Mat'l., bulk. unit	...	2.50	2.40	3.25	1.50	3.50
Nitronaphthalene, 550 lb bbls. ..... lb.	.24	.25	.24	.25	.24	.25
Nutgalls Aleppy, bags.... lb.	...	.18	...	.18	...	.18
Chinese, bags..... lb.	.17	.18	.17	.18	.17	.18
Oak Bark, ground..... ton	30.00	35.00	30.00	35.00	30.00	35.00
Whole ..... ton	20.00	23.00	20.00	23.00	20.00	23.00
Extract, 25% tan., bbls.. lb.	.03⅜	.03½	.03⅜	.03½	...	...
Orange-Mineral, 1100 lb casks NY ..... lb.	.09½	.10	.09½	.10½	.09½	.10¾

* Delivered basis (east of Miss. River).
‡ Higher price is for lcl quantities.

Current — Orthoaminophenol Phosphorous Oxychloride

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Orthoaminophenol, 50 lb kgs. ....lb.	2.15	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs.lb.	1.00	1.00	1.15	1.00	1.15
Orthochlorophenol, drums.lb.	.50	.50	.65	.50	.65
Orthocresol, drums.....lb.	.13	.13	.15	.13	.15
Orthodichlorobenzene, 1000 lb. drums .....lb.	.05½	.05½	.06	.05½	.06
Orthonitrochlorobenzene, 1200 lb drs wks.....lb.	.28	.28	.29	.28	.29
Orthonitrotoluene, 1000 lb drs wk .....lb.	.05½	.05½	.06	.05½	.06
Orthonitrophenol, 350 lb dr. ....lb.	.52	.52	.80	.52	.90
Orthotoluidine, 350 lb bbl l-c-l .....lb.	.14	.14	.15	.14	.22
Orthonitroparachlorphenol, tins .....lb.	.70	.70	.75	.70	.75
Osage Orange, crystals...lb.	.16	.16	.17	.16	.17
51 deg. liquid.....lb.	.07	.07	.07¾	.06	.07¾
Powdered, 100 lb bags..lb.	.14½	.14½	.15	.14½	.15
Paraffin, refd, 200 lb cs slabs					
123-127 deg. M. P.....lb.	.047	.04¾	.04½	.02	.04½
128-132 deg. M. P.....lb.	.04¾	.0515	.04¾	.0315	.04¾
133-137 deg. M. P.....lb.	.0575	.07	.05	.043	.05¾
Para Aldehyde, 110-55 gal. drs. .....lb.*	.16	.16	.18	.16	.18
Aminoacetanilid, 100 lb. bg. .....lb.	.52	.52	.60	.52	.60
Aminohydrochloride, 100 lb. kegs .....lb.	1.25	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs.lb.	.78	.78	.80	.78	.80
Chlorophenol, drums....lb.	.50	.50	.65	.50	.65
Coumarone, 330 lb drs..lb.	...	...	...	...	...
Cymene, refd, 110 gal dr. .....gal.	2.25	2.25	2.50	2.25	2.50
Dichlorobenzene, 150 lb bbls wks.....lb.	.16	.16	.20	.15	.18
Nitroacetanilid, 300 lb. bbls .....lb.	.45	.45	.52	.45	.52
Nitroaniline, 300 lb bbls wks .....lb.	.48	.48	.55	.48	.55
Nitrochlorobenzene, 1200 lb. drs. wks.....lb.	.23½	.23½	.24	.23½	.26
Nitro-orthotoluidine, 300 lb. bbls .....lb.	2.75	2.75	2.85	2.75	2.85
Nitrophenol 185 lb bbls.lb.	.45	.45	.50	.45	.50
Nitrosodimethylaniline, 120 120 lb. bbls.....lb.	.92	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls.lb.	.35	.35	.37	.29	.37
Phenylenedamine, 350 lb bbls. .....lb.	1.25	1.25	1.30	1.15	1.30
Para Tertiary amyl phenol wks. drums .....lb.	...	...	.50	...	...
Toluenesulfonamide, 175 lb bbls. .....lb.	.70	.70	.75	.70	.75
Toluenesulfonchloride, 410 lb bbls wks.....lb.	.20	.20	.22	.20	.22
Toluidine, 350 lb bbls wk .....lb.	.56	.56	.60	.56	.60
Paris Green, Arsenic Basis					
100 lb kegs.....lb.	...	...	.23	...	.24
250 lb kegs.....lb.	...	...	.22	...	.23
Perchlorethylene, 50 gal dr.lb.	...	...	.15	...	...
Persian Berry Ext, bbls..lb.	.25	.25	Nom.	.25	Nom.
Pentane, normal, 28-38° C. group 3, tanks.....gal.	...	...	.09	...	...
Pentasol (see Alcohol, Amyl)					
Pentasol Acetate (see Amyl Acetate)					
Petrolatum, Green, 300 lb. bbl. .....lb.	.01⅞	.01⅞	.02	.01⅞	.02
Petroleum Ethers, tks. 30-60°, Group 3.....gal.	...	.11	.13	.10	.11
Petroleum solvents and diluuents					
Cleaners' naphtha, Group 3, tanks .....gal.	.06⅞	.06⅞	.07⅜	.05	.07¾
Lacquer diluents, Bayonne, tanks .....gal.	.12	.12	.12½	.12	.12¾
Group 3, tanks....gal.	.07⅞	.06⅞	.08⅜	.06¼	.08⅛
Petroleum thinner 47-49° tanks, Group 3.....gal.	.05⅞	.05⅞	.06⅜	...	...
Rubber solvent, stand. grade tanks, Group 3.gal.	...	...	.06⅞	.05	.06⅞
East Coast tanks....gal.	...	.09½	...	.09	.09½
Stoddard solvents 48-50 deg. tanks, Group 3.....gal.	.06⅜	.06⅜	.07⅛	.04½	.06⅜
East Coast tanks....gal.	...	.09½	...	.09	.09½
Phenol, 250-100 lb drums.lb.	.14¼	.14¼	.15	.14¼	.15
Phenyl-Alpha-Naphthylamine, 100 lb kegs.....lb.	...	...	1.35	...	1.35
Phenyl Chloride, drums..lb.	...	.16	...	...	...
Phenylhydrazine Hydrochloride .....lb.	2.90	2.90	3.00	2.90	3.00
Phosphate Acid (see Superphosphate)					
Phosphate Rock, f.o.b. mines					
Florida Pebble, 68% basis .....ton	2.85	2.85	3.20†	2.75	3.25
70% basis .....ton	3.35	3.35	3.70†	3.25	3.90
72% Basis .....ton	3.85	3.85	4.20*	3.75	4.35
73-74% basis .....ton	4.90	4.90	5.30†	4.75	5.50
75% basis .....ton	5.05	5.05	5.40†	4.85	5.75
77-80% basis .....ton	5.90	5.90	6.20†	5.75	6.30
Tennessee, 72% basis..ton	...	...	5.00†	...	5.00
Phosphorous Oxychloride 175 lb. cyl.....lb.	.16	.16	.20	.16	.23
Red, 110 lb cases.....lb.	.44	.44	.45	.40	.45
Yellow, 110 lb cs wks.lb.	.28	.28	.33	.27½	.33

* Higher price is for lcl quantities.
† Higher prices run to Jan.-June 1935.

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Phosphorus, Oxychloride
Satin, White

Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Sesquisulfide, 100 lb cs..lb.	.38	.44	.38	.44	.38	.44
Trichloride, cylinders...lb.	.16	.20	.16	.20	.16	.23
Phthalic Anhydride, 100 lb wks .....lb.	.14½	.15	.14½	.15	.13½	.16
Pigments Metallic, Red or or brown bags, bbls, Pa. wks .....ton	37.00	45.00	37.00	45.00	37.00	45.00
Pine Oil, 55 gal drs or bbls. Destructive dist.....lb.	.59	.62	.59	.62	.59	.62
Steam dist. wat. wh. bbls. .....gal.	.64	.65	.64	.65	...	...
Prime bbls.....bbl.	8.00	10.60	8.00	10.60	8.00	10.60
Pitch Hardwood, wks....ton	...	20.00	...	20.00	20.00	25.00
Plaster Paris, tech, 250 lb. bbls. .....bbl.	3.40	3.50	3.40	3.50	3.30	3.50
Platinum, Refined.....oz.	37.00	38.00	37.00	38.00	24.00	38.00
Pontol, tanks .....per gal.	...	.54	...	.54	...	.54
Potash, Caustic, wks, sol.lb.	.07⅛	.07⅜	.07⅛	.07⅜	.06⅛	.07⅜
flake .....lb.	.0803	.08¼	.0803	.08¼	.0705	.08¼
Liquid tanks .....lb.	...	.03⅝	...	.03⅝	...	...
Potash Salts, Rough Kainit 12.4% basis bulk.....ton	...	9.20	...	9.20	...	9.20
14% basis .....ton	...	9.70	...	9.70	...	9.70
Manure Salts..... 20% basis bulk.....ton	...	12.00	...	12.00	...	12.00
30% basis bulk.....ton	...	19.15	...	19.15	...	19.15
Potassium Acetate.....lb.	.27	.28	.27	.28	.27	.28
Potassium Muriate, 80% basis bags .....ton	...	37.15	...	37.15	...	37.15
Pot. & Mag. Sulfate, 48% basis bags.....ton	...	25.00	...	25.00	25.00	27.80
Potassium Sulfate, 90% basis bags .....ton	...	42.15	...	42.15	42.15	47.50
Potassium Bicarbonate, USP, 320 lb bbls.....lb.	.07½	.09	.07½	.09	.07½	.09
Bichromate Crystals, 725 lb casks .....lb.	.08⅛	.08⅝	.08⅛	.08⅝	.07¼	.08⅝
Binoxalate, 300 lb bbls.lb.	.22	.23	.14	.23	.14	.17
Bisulfate, 100 lb kegs..lb.	.16	.30	.16	.30	.16	.30
Carbonate, 80-85% calc 800 lb casks.....lb.	.07	.07½	.07	.07½	.04⅞	.07½
Chlorate crystals, powd. 112 lb keg wks.....lb.	...	.09	.08½	.09	.08	.09
Chloride, crys. bbls.....lb.	.04	.04¾	.04	.04¾	.04	.04¾
Chromate, kegs.....lb.	.23	.28	.23	.28	.23	.28
Cyanide, 110 lb. cases..lb.	.55	.60	.55	.60	.50	.60
Iodide, 75 lb. bbls.....lb.	1.65	1.70	1.65	2.70	2.35	2.70
Metabisulfite, 300 lb bbl.lb.	.10½	.11	.10½	.11	.10½	.11
Oxalate, bbls.....lb.	.16	.24	.16	.24	.16	.24
Perchlorate, cask wks...lb.	.09	.11	.09	.11	.09	.11
Permanganate, USP, crys. 500 & 1000 lb drs wks lb.	.18½	.19½	.18½	.19½	.17½	.19½
Prussiate, red, 112 lb kg.lb.	.39	.41	.35	.39	.39	.41
Yellow, 500 lb casks..lb.	.18	.19	.18	.19	.16½	.19
Tartrate Neut, 100 lb kg.lb.	...	.21	...	.21	...	.21
Titanium Oxalate, 200 lb bbls. .....lb.	.32	.35	.32	.35	...	...
Propane, group 3, tanks.....	...	.07	...	.07	...	.07
Pumice Stone, lump bags.lb.	.04½	.06	.04½	.06	.04	.06
250 lb bbls.....lb.	.05	.07	.05	.07	.04½	.07
Powdered, 350 lb bags..lb.	.02½	.03	.02½	.03	.02½	.03
Putty, commL, tubs...100 lb.	...	2.25	...	2.25	2.00	2.25
Linseed Oil, kegs...100 lb.	4.00	4.50	4.00	4.50	3.40	4.50
Pyridine, 50 gal drums...gal.	...	1.25	...	1.25	.85	1.25
Pyrites, Spanish cif Atlantic ports bulk.....unit	.12	.13	.12	.13	.12	.13
Quebracho, 35% liq. tks...lb.	...	.02⅜	.02¼	.02⅜	.02	.02⅜
450 lb bbls c-l.....lb.	...	.02⅞	.02¾	.02⅞	.02⅜	.02⅞
Solid, 63%, 100 lb bales cif .....lb.	...	.02⅞	.02⅞	.03⅜	.02⅜	.03⅜
Clarified, 64%, bales..lb.	...	.03	.03	.03½	.02⅜	.03½
Quercitron, 51 deg liquid 450 lb. bbls.....lb.	.06	.06½	.05½	.06½	.05½	.06
Solid, 100 lb boxes.....lb.	.10	.12	.09½	.13	.09½	.13
Bark, Rough.....ton	...	14.00	...	14.00	...	14.00
Ground .....ton	34.00	35.00	34.00	35.00	34.00	35.00
R Salt, 250 lb bbls wks...lb.	.40	.44	.40	.44	.40	.44
Red Sanders Wood, grd bbls. .....lb.	...	.18	...	.18	...	.18
Resorcinol Tech, cans.....lb.	.65	.75	.65	.75	.65	.70
Rochelle Salt, cryst.....lb.	.15½	.16	.12½	.16	...	...
Rosin Oil, 50 gal bbls, first run .....gal.	...	.48	.45	.48	.42	.46
Second run.....gal.	...	.53	.50	.53	.46	.51
FF Wood Rosin, c.l. NY..	...	5.50	5.50	6.13	...	...
Rosins 600 lb bbls 280 lb..unit ex. yard N. Y.						
B ..	...	5.60	4.50	5.75	2.75	5.15
D	...	5.80	4.60	5.85	2.95	5.15
E	...	5.80	4.80	6.50	3.55	5.15
F	...	5.87½	5.00	6.75	3.85	5.17½
G	...	5.87½	5.05	6.75	3.90	5.17½
H	...	5.90	5.10	6.75	4.00	5.17½
I	...	6.00	5.15	6.75	4.05	5.20
K	...	6.05	5.30	6.75	4.60	5.20
M	...	6.25	5.50	6.80	4.35	5.25
N	...	6.35	5.50	6.80	4.75	5.40
WG	...	6.40	5.95	6.80	4.80	5.60
WW	...	6.50	6.50	6.85	4.85	6.20
Rotten Stone, bags mines.ton	23.50	24.00	23.50	24.00	23.50	24.00
Lump, imported, bbls...lb.	.05	.07	.05	.07	.05	.07
Selected bbls.....lb.	.09	.12	.09	.12	.09	.12
Powdered, bbls.....lb.	.02½	.05	.02½	.05	.02	.05
Sago Flour, 150 lb bags..lb.	.02½	.03	.02½	.03	.02½	.03
Sal Soda, bbls wks...100 lb.	1.10	1.10	1.10	1.10	.90	1.10
Salt Cake, 94-96% c-l wks. ton	13.00	18.00	13.00	18.00	13.00	18.00
Chrome .....ton	12.00	13.00	12.00	13.00	12.00	13.00
Saltpetre, double refd granular 450-500 lb bbls...lb.	...	.06	...	.06	.05¾	.06¾
Satin, White, 550 lb bbls..lb.	...	.01½	...	.01½	...	.01½

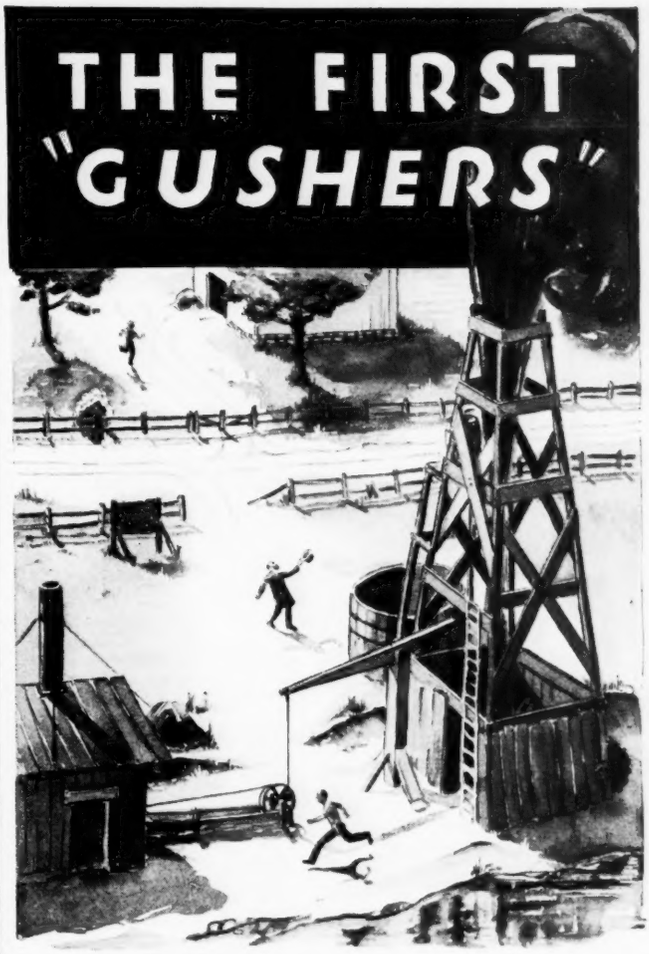
* Higher price is for lcl quantities.

Current

Shellac Bone Dry Sulfur Brimstone

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Shellac Bone dry bbls...lb.	.35	.26	.37	.18	.28
Garnet, bags.....lb.	.30	.24	.31	.15	.20
Superfine, bags.....lb.	.30	.23	.31	.09½	.18¾
T. N. bags.....lb.	.28	.20	.29	.08½	.17¾
Schaeffer's Salt kegs.....lb.	.48	.48	.50	.48	.50
Silica, Crude, bulk mines.ton	8.00	8.00	11.00	8.00	11.00
Refined, floated bags...ton	22.00	22.00	30.00	22.00	30.00
Air floated bags.....ton	...	...	32.00	...	32.00
Extra floated bags...ton	30.00	30.00	35.00	30.00	35.00
Silver Nitrate, vials.....oz.	...	.32⅝	.31⅞ .35⅜	...	...
Soapstone, Powdered, bags f.o.b. mines.....ton	15.00	15.00	22.00	15.00	22.00
Soda Ash, 58% dense, bags c-l wks.....100 lb.	...	...	1.25	1.17½	1.25
58% light, bags....100 lb.	...	...	1.25	1.17½	1.23
Soda Caustic, 76% grnd & flake drums.....100 lb.	...	...	3.00	2.90	3.00
76% solid drs.....100 lb.	...	...	2.60	2.50	2.60
Liquid sellers tanks, 100 bls.	...	...	2.25	2.15	2.25
Sodium Abietate, drs.....lb.	...	.03	.08	...	.03
Acetate, tech 450 lb. bbls wks .....lb.	.04½	.04½	.05	.04¼	.05
Alignate, drs.....lb.	...	...	.50	...	.50
Aresenate, drums.....lb.	.07¾	.07¾	.08¾	.07¾	.08¾
Arsenite, drums.....gal.	.40	.40	.75	.05	.75
Benzoate U.S.P., kegs..lb.	.45	.45	.47	...	...
Bicarb, 400 lb bbl...100 lb.	...	...	2.25	...	2.25
Bichromate, 500 lb cks wks. .....lb.	.06⅛	.06⅛	.06⅛ .06⅝	.044	.07
Bisulfite, 500 lb bbl wks.lb.	.03	.0335	.03 .0335	.02¾	.0335
Chlorate, wks.....lb.	.06¼	.07½	.06¼ .07½	.05¾	.07¾
Chloride, technical.....ton	13.60	11.40	16.50	11.40	14.00
Cyanide, 96-98%, 100 & 250 lb. drums wks.....lb.	.15½	.15½	.16½	.15½	.16
Fluoride, 300 lb bbls wks .....lb.	.07½	.07½	.09½	.07	.07½
Hydrosulfite, 200 lb bbls f.o.b wks.....lb.	.19½	.19½	.21	.20	.21
Hypochloride solution, 100 lb. cbys. .....lb.	...	...	.05	...	.05
Hyposulfite, tech, pea crys 375 lb bbls wks..100lb.	2.40	2.40	3.00	2.40	3.00
Technical, regular cryst. 375 lb bbls wks.100 lb.	2.40	2.40	2.65	2.40	2.65
Iodide, ...lb.	2.75	2.75	3.50	3.10	3.50
Metanilate, 150 lb bbls..lb.	.41	.41	.42	.44	.45
Metasilicate, c-l, wks.100 lb.	2.65	2.65	3.05	2.65	3.25
Monohydrate, bbls.....lb.	...	...	.02½	...	.02½
Naphthionate, 300 lb bbl.lb.	.52	.52	.54	.52	.54
Nitrate, 92%, crude, 200 lb. bags c-l NY...100 lb.	...	...	1.31½	1.26	1.31½
100 lb. bags .....ton	...	27.00	27.00	...	...
Bulk .....ton	...	24.50	24.50	...	...
Nitrite, 500 lb bbls spot.lb.	.07¼	.07¼	.08	.07¼	.08
Orthochlorotoluene, sulfonate, 175 lb bbls wks.lb.	.25	.25	.27	.25	.27
Perborate, 275 lb bbls..lb.	.18	.18	.19	.17	.19
Peroxide, bbls, 400 lb...lb.	...	...	.17	...	...
Phosphate, di-sodium, tech, 310 lb bbls.....100 lb.	...	2.10	2.40	2.00	2.40
tri-sodium, tech, 325 lb bbls. .....100 lb.	...	2.60	2.70	2.15	2.50
Picramate, 160 lb kegs..lb.	.69	.69	.72	.69	.72
Prussiate, Yellow, 350 lb bbl. wks.....lb.	.11½	.11½	.12	.11½	.12
Pyrophosphate,100 lb kg.lb.	.16½	.16½	.18	.15	.20
Silicate, 60 deg 55 gal drs, wks. .....100 lb.	1.65	1.65	1.70	1.65	1.70
40 deg 55 gal drs, wks .....100 lb.	...	...	.80*	.75	.80
Silicofluoride, 450 lb bbls NY .....lb.	.05	.04¾	.06	.04½	.06
Stannate, 100 lb drums.lb.	.34½	.34	.37½	.18	.37
Stearate, bbls.....lb.	.20	.20	.25	.20	.25
Sulfanilate, 400 lb, bbls..lb.	.16	.16	.18	.16	.18
Sulfate Anhyd, 550 lb bbls c-l wks.....lb.	.022	.022	.0285	.02	.0285
Sulfide, 80% crystals, 440 lb bbls wks.....lb.	...	.02¼	.02½	.02½	.02¾
62% solid, 650 lb drums c-l wks.....lb.	...	...	.03	...	.03
Sulfite, crystals, 400 lb bbls wks .....lb.	.02¼	.02½	.02¼ .02½	.03	.03¼
Sulfocyanide, bbls.....lb.	.28	.28	.35	.28	.35
Tungstate, tech, crystals, kegs .....lb.	.83	.70	.88	.57	.67
Spermaceti, blocks, cases..lb.	.19	.18	.20	.17	.22
Cakes, cases.....lb.	.20	.19	.21	.18	.23
Spruce Extract, ord., tks..lb.	...	...	.01	.00⅞	.01
Ordinary, bbls.....lb.	...	.01½	...	.01½ .01¼	.01½
Super spruce ext, tks....lb.	...	.01⅜	...	.01⅜ .01¼	.01⅝
Super spruce ext., bbls..lb.	...	.01⅞	...	.01⅞ .01⅝	.01⅞
Super spruce ext, powd., bags .....lb.	...	.04	...	.04	... .04
Starch, powd, 140 lb bags .....100 lb.	3.01	2.81	3.21	2.29	3.01
Pearl, 140 lb bags...100 lb.	2.91	2.71	3.01	2.19	2.91
Potato, 200 lb bags.....lb.	.05¼	.05¼	.06	.03¾	.06
Imported bags .....lb.	.06	.06	.06½	.04¾	.06½
Starch, Potato Soluble....lb.	.08	.08	.08½	.08	.08½
Rice, 200 lb bbls.....lb.	.07½	.07½	.08½	.07	.08½
Wheat, thick bags.....lb.	.06¼	.06¼	.06¾	.05¾	.06¾
Thin bags.....lb.	.10	.10	.10¼	.09½	.10¼
Strontium carbonate, 600 lb. bbls wks.....lb.	.07¼	.07¼	.07½	.07¼	.07½
Nitrate, 600 lb bbls NY.lb.	.10½	.10½	.11	.07	.11
Peroxide, 100 lb drs....lb.	...	...	1.25	...	1.25
Sulfur Brimstone, bkn. rock, 250 lb bag c-l....100 lb.	...	...	2.05	...	2.05

* Tanks, 15c less.



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Sulfur Brimstone
Zinc Cyanide
Prices

	Current Market	1934 Low	1934 High	1933 Low	1933 High
Crude, f.o.b. mines....ton	18.00	19.00	18.00	19.00	18.00	19.00
Flour for dusting 99½%, 100 lb bgs c-l NY 100 lb.	...	2.40	...	2.40	...	2.40
Heavy bags c-l...100 lb.	...	2.50	...	2.50	...	2.50
Flowers, 100%, 155 lb bbls c-l NY.....100 lb.	...	3.45	...	3.45	...	3.45
Roll, bbls l-c-l NY..100 lb.	2.65	2.85	2.65	2.85	2.65	2.85
Sulfur Chloride, red, 700 lb drs wks.....lb.	.05	.05½	.05	.05½	.05	.05½
Yellow, 700 lb. drs wks..lb.	.03½	.04½	.03½	.04½	.03½	.04½
Sulfur Dioxide, 150 lb cyl.lb.	.07	.08	.07	.08	.07	.08
Extra, dry, 100 lb cyl..lb.	.11	.13	.11	.13	.10	.13
Sulfuryl Chloride.....lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, ground..ton	69.00	71.00	69.00	75.00	50.00	75.00
Talc, Crude, 100 lb bags NY .....ton	12.00	15.00	12.00	15.00	12.00	15.00
Refined, 100 lb bags NY .....ton	16.00	18.00	16.00	18.00	16.00	18.00
French, 220 lb bags NY.ton	27.50	30.00	27.50	30.00	18.00	30.00
Refined, white, bags ..ton	45.00	60.00	45.00	60.00	35.00	60.00
Italian, 220 lb bags to arr. .....ton	70.00	75.00	70.00	75.00	48.50	75.00
Refined, white bags NY .....ton	75.00	80.00	75.00	80.00	50.00	80.00
Superphosphate, 16% bulk, wks .....ton	...	8.00	...	8.00	6.50	8.00
Run of pile.....ton	...	7.50	...	7.50	6.00	7.50
Tankage Ground NY...unit	...	2.65*	2.50	2.75*	1.70	2.75*
Unground .....unit	...	2.50*	...	2.35	2.35	2.60
Fert. grade f.o.b. Chicago .....unit	...	1.80*	1.80	2.40*	1.40	3.00
South American cif...unit	...	2.75*	2.75	3.10*	...	2.50
Tapioca Flour, high grade bgs. .....lb.	.03	.05	.03	.05	.03	.05
Medium grade, bgs.. lb.	.03	.04	.03	.04	.03	.04
Tar Acid Oil, 15%, drs..gal.	.21	.22	.21	.22	.20	.22
25% drums.....gal.	.23	.24	.23	.24	.22	.24
Tartar Emetic, Tech.....gal.	...	.22¾	.23	.23	...	...
U. S. P. .....gal.	.28	.28½	.27	.28½	...	...
Terra Alba Amer. No. 1, bgs or bbls mills...100 lb.	1.15	1.75	1.15	1.75	1.15	1.75
No. 2 bgs or bbls..100 lb.	1.00	1.25	1.00	1.25	1.00	1.25
Imported bags.....lb.	.01⅛	.01¼	.01⅛	.01¼	.01⅛	.01¼
Tetrachlorethane, 50 gal drs lb.	.08½	.09	.08½	.09	.08½	.09
Tetralene, 50 gal drs wks ..lb.	.12	.13	.12	.13	.12	.13
Thiocarbanilid, 170 lb bbl.lb.	.20	.25	.20	.25	.25	.28½
Tin						
Crystals, 500 lb bbls wks lb.	...	.39	.30	.04½	.24	.41
Metal Straights NY....lb.	...	.5245	.50⅞	.55⅜	.23	.57
Oxide, 300 lb bbls wks..lb.	.58	.60	.55	.60	.27½	.59
Tetrachloride, 100 lb drs wks .....lb.	.26½	.27½	.25½	.28½	.126	.28
Titanium Dioxide 300 lb. bbl. .....lb.	.17¼	.19¼	.17¼	.19¼	.17¼	.19¼
Calcium Pigment, bbls...lb.	.06¼	.06½	.06¼	.06½	.06¼	.06½
Toluene, 110 gal drs.....gal.	...	.35	...	.35	...	.35
8000 gal tk cars wks..gal.	...	.30	...	.30	...	.30
Toluidine, 350 lb bbls....lb.	.88	.89	.88	.89	.88	.89
Mixed, 900 lb drs wks..lb.	.27	.28	.27	.28	.27	.28
Toner Lithol, red, bbls...lb.	.75	.80	.75	.85	.80	.95
Para, red, bbls.....lb.	...	.75	.75	.80	...	.80
Toluidine .....lb.	...	1.35	...	1.35	1.35	1.55
Triacetin, 50 gal drs wks.lb.	.32	.36	.32	.36	.32	.36
Triamyl Borate, drs, wks.lb.	...	.40	...	.40	...	...
Triamylamine, drs, wks..lb.	...	1.00	...	1.00	...	...
Trichlorethylene, 50 gal dr.lb.	.09½	.10	.09½	.10	.09½	.10
Triethanolamine, 50 gal drs .....lb.	.35	.38	.35	.38	.35	.38
Tricresyl Phosphate, drs..lb.	.19	.26	.19	.26	.19	.26
Triphenyl guanidine.....lb.	.58	.60	.58	.60	.58	.60
Phosphate, drums.....lb.	.37	.39	.37	.39	.37	.39
Tripoli, 500 lb bbls..100 lb.	.75	2.00	.75	2.00	.75	2.00
Tungsten, Wolframite..... .....per unit	12.00	12.50	12.00	12.50	10.00	12.50
Turpentine carlots, N Y dock bbls. .....gal.	.55¾	.56	.47¾	.63½	.46¼	.51½
Savannah, bbls.....gal.	...	.51¼	.42¾	.58½	...	...
Jacksonville, bbls.....gal.	...	.51	.43	.58½	...	...
Wood Steam dist, bbls, c-l N. Y. .....gal.	...	.50	.44	.61	.42	.48
Urea, pure, 112 lb cases..lb.	.15	.17	.15	.17	.15	.17
Fert. grade, bags c.i.f..ton	100.00	120.00	90.00	120.00	82.60	90.00
c.i.f. S. points.....ton	100.00	120.00	90.00	120.00	82.60	90.00
Urea Ammonia liq 55% NH_3, tanks .....unit	...	.96	...	.96	...	...
Valonia beard, 42%, tannin bags .....ton	...	40.00	39.00	40.00	27.50	42.00
Cups, 30-31% tannin...ton	23.50	24.50	23.00	27.00	17.00	25.00
Mixture, bark, bags...ton	...	28.00	...	28.00	22.00	28.00
Vermillion, English, kegs.lb.	1.60	1.73	1.41	1.73	1.05	1.42
Vinyl Chloride, 16 lb cyl.lb.	...	1.00	...	1.00	...	1.00
Wattle Bark, bags.....ton	30.00	32.00	30.00	34.00	24.00	32.00
Extract 55%, tks, bbls.lb.	...	.03¾	.03⅝	.03⅞	.03	.03⅞
Whiting, 200 lb bags, c-l wks .....100 lb.	.85	1.00	.85	1.00	.85	1.00
Alba, bags c-l NY....ton	...	15.00	...	15.00	13.00	15.00
Gliders, bags c-l NY.100 lb.	...	1.35	...	1.35	...	1.35
Wood Flour, c-l.....bags	18.00†	30.00	18.00†	30.00	18.00	36.00
Xylene, 10 deg tks wks.gal.	...	.29	...	.29	.29	.29
Commercial, tks wks..gal.	...	.26	...	.26	...	.26
Xylidine, crude.....lb.	.36	.37	.36	.37	.36	.37
Zinc Ammonium Chloride powd., 400 lb bbls...lb.	.04¾	.05	.04¾	.05	.04¾	.05
Carbonate Tech., bbls NY .....lb.	.09½	.11	.09½	.11	.09½	.11
Chloride Fused, 600 lb drs wks. .....lb.	.04¼	.05	.04¼	.05	.05	.05¾
Gran, 500 lb bbls wks..lb.	...	.05⅛	.05⅛	.06	.05⅜	.06
Soln 50%, tks wks..100 lb.	...	2.00	...	2.00	...	3.00
Cyanide, 100 lb drums..lb.	.36	.41	.36	.41	.38	.39

* &10. † Depends upon grade.

Current

Zinc Dust
Whale Oil

	Unit	Current Market	1934 Low	1934 High	1933 Low	1933 High
Zinc Dust, 500 lb bbls c-l wks	lb.	...	.0630	.0630	.071	.04¾ .07½
Metal, high grade slabs c-l N Y	100 lb.	...	4.65	4.65	4.87	3.02 5.37
Oxide, Amer., bags wks.	lb.	.05¼	.06¼	.05¾	.06¼	.05 .06
French, 300lb bbls wks.	lb.	.05¾	.11⅜	.05¾	.11⅜	.05¾ .11⅜
Palmitate, bbls	lb.	.20	.21	.20	.21	.17½ .21
Perborate, 100 lb drs.	lb.	...	1.25	...	1.25	... 1.25
Peroxide, 100 lb drs.	lb.	...	1.25	...	1.25	... 1.25
Resinate, fused, dark, bbls.	lb.	.05¾	.06½	.05¾	.06½	.05¾ .06½
Stearate, 50 lb bbls.	lb.	.18	.19	.18	.19	.15 .19
Sulfate, crystals, 400 lb bbl wks	lb.	.028	.033	.02¾	.033	.03 .03½
Flake, bbls	lb.	.032	.037	...	...	... ...
Sulfide, 500 lb bbls.	lb.	.13	.13½	.13	.13½	.12 .13½
Sulfocarbolate, 100 lb keg.	lb.	.21	.22	.21	.22	.21 .22
Zirconium Oxide, Nat. kegs.	lb.	.02½	.03	.02½	.03	.02½ .03
Pure kegs	lb.	.45	.50	.45	.50	.45 .50
Semi-refined kegs	lb.	.08	.10	.08	.10	.08 .10
Oils and Fats						
Castor, No. 1, 400 lb bbls.	lb.	...	.09¾	...	.09¾	.09¼ .10
No. 3, 400 lb bbls.	lb.	...	.09¾	...	.09¾	.08½ .09¾
Blown, 400 lb bbls.	lb.	.11½	.12¼	.11½	.12¾	.11¼ .12¾
China Wood, bbls spot NY.	lb.	.09¼	.09½	.07½	.09½	.04⅞ .09⅛
Tanks, spot NY	lb.	.087	.089	.07¼	.089	.04¼ .08½
Coast, tanks	lb.	.08⅜	.08½	.06⅞	.08½	.04⅞ .08⅛
Coconut, edible, bbls NY.	lb.	...	.05⅛	.05⅛	.10¾	... .10¾
Manila, bbls NY	lb.	...	.04	.03⅝	.04	.03⅞ .04¾
Tanks, N Y	lb.	...	.02⅜	.02⅝	.03	.02¾ .03¾
Tanks, Pacific Coast.	lb.	...	.02⅜	.02¼	.02⅞	.02½ .03⅜
Cod, Newfoundland, 50 gal. bbls	gal.	.48	Nom.	.34	.40	.10 .35
Copra, bags, N Y	lb.	.012	.0125	.012	.016	.0152½.019
Corn, crude, bbls NY.	lb.	.05¾	.05⅞	.04⅝	.06	.04⅝ .07¾
Tanks, mills	lb.	...	.04¾	.03½	.04⅞	.02⅞ .06½
Refined, 375 lb bbls NY.	lb.	.06¾	.06⅛	.05¾	.07¼	.05¾ .08¾
Degras, American, 50 gal bbls NY	lb.	.02¾	.03	.02¾	.03	.02½ .03
English, brown, bbls NY.	lb.	.04¼	.04½	.03¾	.04	.02⅞ .04
Greases, Brown	lb.	.02½	.03	.02	.03	.02 .03⅛
Yellow	lb.	.03⅛	.03¼	.02⅜	.03¼	.01¾ .03⅝
White, choice bbls NY.	lb.	.03¼	.03⅞	.02¾	.03⅞	.02½ .04⅝
Herring, Coast, tanks.	gal.	.17	Nom.	.15	.15	.11 .23
Lard Oil, edible, prime.	lb.	...	.09¾	...	.09¾	.08½ .10½
Extra, bbls	lb.	...	.08	.07¾	.08	.07½ .08¼
Extra No. 1, bbls.	lb.	...	.07¾	.07½	.07¾	.06 .08
Linseed, Raw, less than 5 bbl. lots	lb.	...	.105	.101	.105	.08 .12
Bbls c-l spot	lb.	...	.101	.093	.101	.072 .11
Tanks	lb.	...	.095	.087	.095	.066 .104
Menhaden, Tanks, Baltimore	gal.	...	.20	.15	.20	.09 .15
Refined, alkali bbl.	lb.	.057	.061	.057	.069	... ...
Tanks	lb.	...	.051	.051	.061	... ...
Light Pressed, bbls.	lb.	.051	.055	.051	.057	... ...
Tanks	lb.	...	.045	.045	.049	... ...
Neatsfoot, CT, 20° bbls NY.	lb.	...	.16½	...	.16½	.11¾ .16¾
Extra, bbls NY	lb.	...	.08	.07¾	.08	.06½ .08¼
Pure, bbls NY	lb.	...	.12	.12	.13	.07¾ .14
Oleo, No. 1, bbls NY.	lb.	...	.06	.06	.06½	.05 .06⅞
No. 2, bbls NY	lb.	...	.05½	.05⅜	.05⅞	.04¼ .06⅜
Olive, denat, bbls NY.	gal.	.88	.89	.76	.90	.47 .80
Edible, bbls NY	gal.	1.75	1.90	1.60	1.90	1.30 1.85
Foots, bbls NY	lb.	.07⅛	.07⅜	.06½	.07⅜	.04⅜ .06¾
Palm, Kernel, casks	lb.	.03½	Nom.	.03½	.04½	.04 .04¾
Lagos, 1500 lb casks.	lb.	...	.03⅞	.03⅝	.03⅞	.02⅝ .04¾
Niger, casks	lb.	.03¼	.03⅜	.03¼	.03¾	.024 .04½
Peanut, crude, bbls NY.	lb.	...	.07¾	.06½	.07¾	.03⅞ .07
Refined, bbls NY	lb.	.08½	.10	.07½	.10½	.07½ .11
Perilla, bbls NY	lb.	.09½	.09⅝	.08½	.09⅝	.05 .10½
Tanks, Coast	lb.	.07¾	Nom.	.07½	.08	.03¾ .09¾
Poppyseed, bbls NY.	gal.	1.50	1.60	1.45	1.60	1.45 1.70
Rapeseed, blown, bbls NY.	gal.	.08	.082	.08	.082	... ...
Denatured, drms, NY.	gal.	.38	.39	.38	.44	.34 .65
Red, Distilled, bbls.	lb.	.06⅞	.07⅝	.06⅞	.07⅝	.05⅞ .07⅝
Tanks	lb.	...	.06	...	.06	.05 .06
Salmon, Coast, 8000 gal tks	gal.	...	Nom.	.15	.17	.11 .18
Sardine, Pac. Coast tks.	gal.	.22½	.25	.13	.25	.09½ .20
Sesame, edible, yellow,dom.	lb.	.08½	.09	.07½	.09	.08½ .10
White, dos	lb.	.08½	.09	.08	.09½	.10 .11
Soy Bean, crude						
Pacific Coast	lb.	...	Nom.	...	Nom.	.032 .035
Domestic tanks, f.o.b. mills	lb.	...	.06½	.06	.06½	.027 .085
Crude, bbls NY	lb.	.071	.075	.066	.071	.04 .095
Refined, bbls NY	lb.	.076	.087	.071	.087	.04½ .106
Sperm, 38° CT, bleached, bbls N Y	lb.	.108	.11	.108	.11	... ...
45° CT, bleached, bbls NY	lb.	.101	.103	.101	.103	... ...
Stearic Acid, double pressed dist bags	lb.	.09	.10	.09	.10	.07½ .10
Double pressed saponified bags	lb.	.09	.10	.09	.10	.08 .10
Triple pressed dist bags.	lb.	.11¾	.12¾	.11¾	.12¾	.10¼ .12¾
Stearine, Oleo, bbls.	lb.	.05¼	.06	.05	.05⅞	.03½ .06¾
Tallow City, extra loose.	lb.	...	.03½	.02⅞	.03½	.02 .03⅞
Edible, tierces	lb.	...	.04¾	.04¾	.04⅞	.03½ .05⅛
Tallow Oil, bbls, c-l NY.	lb.	.05¾	.06	.05¾	.06	.05¾ .06
Acidless, tanks NY.	lb.	...	.07	.06¾	.07	.05 .07
Vegetable, Coast mats.	lb.	.07	Nom.	.06	.07	.04½ .06
Turkey Red, single, bbls.	lb.	.07½	...	.07½	...	.06¼ .07½
Double, bbls	lb.	.12½	.13	.12½	.13	.08 .13
Whale						
Winter bljch, bbls, NY.	lb.	...	.072	...	.072	... ...
Refined, nat, bbls, NY.	lb.	.068	.07	.068	.07	... ...

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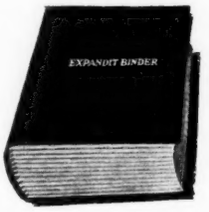

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"We"—Editorially Speaking

It has been reported from England that a new game somewhat resembling golf has recently been invented. Old stuff—hundreds of us have been playing that game for years.

David Lawrence in a full page editorial in the *United States News*, urges that President Roosevelt invite "an economic ambassador to come to the United States from each major producing country to negotiate "exchanges of surpluses." Another Washington "bonus army"?

The mustard grinders in their first code draft prescribed uniform containers so that they would all be equal—which shouldn't please either the "English" or the "German."

Wrong credit for the article on "Sizing and Dressing Starches for Textiles" was given in our April issue. It should have been *"The Chemical Trade Journal,"* from which paper the abstract was taken.

Recent NRA edict will no longer permit sales managers to deliver "pep" talks outside regular working hours unless the poor "recipients" are paid to listen! We never did like "pep" talks any too much; but this latest order makes the "Blue Eagle" look just a little bit more foolish.

Charlie Thompson, of Kansas City, with twelve branch offices from Minneapolis to Dallas, is reasonably well known throughout chemical sales circles as a sterling independent. We don't always agree with the iconoclastic ideas expressed in his always interesting house-organ *"The Test Tube,"* but we are glad to have the opportunity to broadcast the following:

"The prime accent in both the Declaration of Independence and the Constitution is that of individual liberty and the protection of personal freedom and liberty. No thinking person can deny that the present trend of legislation is directly opposed to this accent.

"What do we as American citizens want? We are the final authority! Not the Brain Trust! Not Johnson! Not the President! Not Congress! Don't we still want the American Tradition kept alive? Don't we still want the greatest personal liberty for the greatest number? Don't we still want to feel that the American citizen, regardless of his origin, can achieve any position in our social life which his abilities will justify? Don't we want governmental supervision to be as simple as possible, yet effective to preserve life, liberty, and the pursuit of happiness?

"We admit that we must curb the human greed which preys on its fellow man. We admit that we must control ruthless, organized capital and labor. We admit that we must stamp out both private crime and public graft in governmental affairs.

"However reactionary it may sound, we believe that the American people as a whole desire neither a paternalistic nor a dictatorial form of government. We believe that they prefer the old American tradition with all its inequalities and hardships, its injustices and gambles, rather than the experimental, confusing programs being imposed upon them.

"Beneficent as these new ideas are in their intent, altruistic as they seem in purpose, they thwart the fundamentals of American origin and purpose. Let civilization move a bit more slowly if need be and let human progress work out its program in America along traditional American backgrounds. American traditions have justified themselves in the past; let's continue to trust them in the future."

"Experiment" and "expedient" sound very much alike but they are not at all the same thing.

Fifteen Years Ago

From our issues of June, 1919

Number of export associations in the chemical field formed with the passage of the Webb-Pomerene Export Act.

National Exposition of Chemical Industries moves headquarters from New York to Chicago for Fifth Exposition.

John F. Queeny (Monsanto) and his son, Edgar, sail for England.

Warner D. Huntington, Vice President, Davison Chemical, will assist Tennessee Copper & Chemical in its projected fertilizer development.

T. S. Grasselli elected President Manufacturing Chemists' Association at meeting held in India House, Hanover Square, New York.

Are we indeed losing our rugged individualism after all? Release No. 5106 of the NRA is headed "President Orders Homework Permitted Under Certain Conditions."

Postscript to the big munitions scandal: the two leading tear-gas producers report a deluge of orders as a result of the nation-wide strike epidemic.

To Dr. Charles B. Slade we are indebted for two most useful definitions:

N.R.A.: "A permanent readjustment of many of our ways of thinking"—Franklin D. Roosevelt, President.

Insanity: "A prolonged deviation from the usual ways of thinking"—Dr. C. F. McDonald, Psychiatrist.

The merry squabble between the three well known paint trade papers, *The American Paint Journal; The Paint, Oil and Chemical Review;* and *The Oil, Paint and Drug Reporter,* as to whose prices are to be taken by the Paint Code Authority as the official cost of raw materials will be eventually settled, so we opine, by requiring manufacturers to use their actual replacement values.

Just 300 years ago, 1633, Massachusetts passed the first wage law in the country: To fix maximum wages for craftsmen at fifty cents per day. And the day was from sunrise to sunset. Instead of committees appointed to study the best employment of leisure time, there was a board appointed to hear charges of "laziness" on the part of workmen. How times do change!

May we point out that those who usually "get it in the neck" during inflation are called in this country "white-collar" workers; but in Great Britain they are known as "black-coated" workers. In view of the usual results we cast one vote for the British term as being much more representative.

The King was in the White House
spending all the money,
The Queen was on the front page lookin'
kinda funny,
The knaves are all in Congress passing
brain trust laws,
While Uncle Sam with alphabets is
playing Santa Claus.